# DIGITAL A/V SURROUND RECEIVER

## MX980/22S

## FR984/00S

Service
Service
Service

# Service Manual

For repair information please refer to Service Manual of FR965/00 & FR966/00S
(servicecode number = 3104 215 50070)

FR984/00S & MX980/22S is equal to FR966/00S except the following:

**Miscellaneous:**

| | |
|---|---|
| 3104 219 04460 | REMOTE CONTROL |
| 9965 000 11845 | FRONT SPEAKER SILVER MX980FS |
| 9965 000 11846 | GRILL ASSY FRONT/REAR SPEAKER |
| 9965 000 11847 | CENTER SPEAKER SILVER MX980CS |
| 9965 000 11848 | GRILL ASSY CENTER SPEAKERK |
| 9965 000 11849 | REAR SPEAKER SILVER MX980RS |
| 9965 000 11844 | KEYHOLE BRACKET , MOUNTING |

**Electrical:**
Led 6401,6421 are deleted
Led 6407,6408,6409,6410,6412,6413,6415,6416,6417,6418 red colour led
is changed into orange colour led code number : 4822 130 11589

uP 7415 changed into TMP87CS71F-MX970 code number : 3139 110 53181

Item 1301 changed into 1304 code number : 4822 265 11607
Item 2371 changed into 2317 4n7 code number : 5322 126 10223
Item 2372 changed into 2322 100p code number : 5322 122 32531
Item 2373 changed into 2328 4n7 code number : 5322 126 10223
Item 2374 changed into 2331 100p code number : 5322 122 32531
Item 2375 changed into 2335 4n7 code number : 5322 126 10223
Item 2376 changed into 2339 100p code number : 5322 122 32531

Mainstrafo 5001 changed code number : 3104 218 31020
Mains Outled 1053 are deleted

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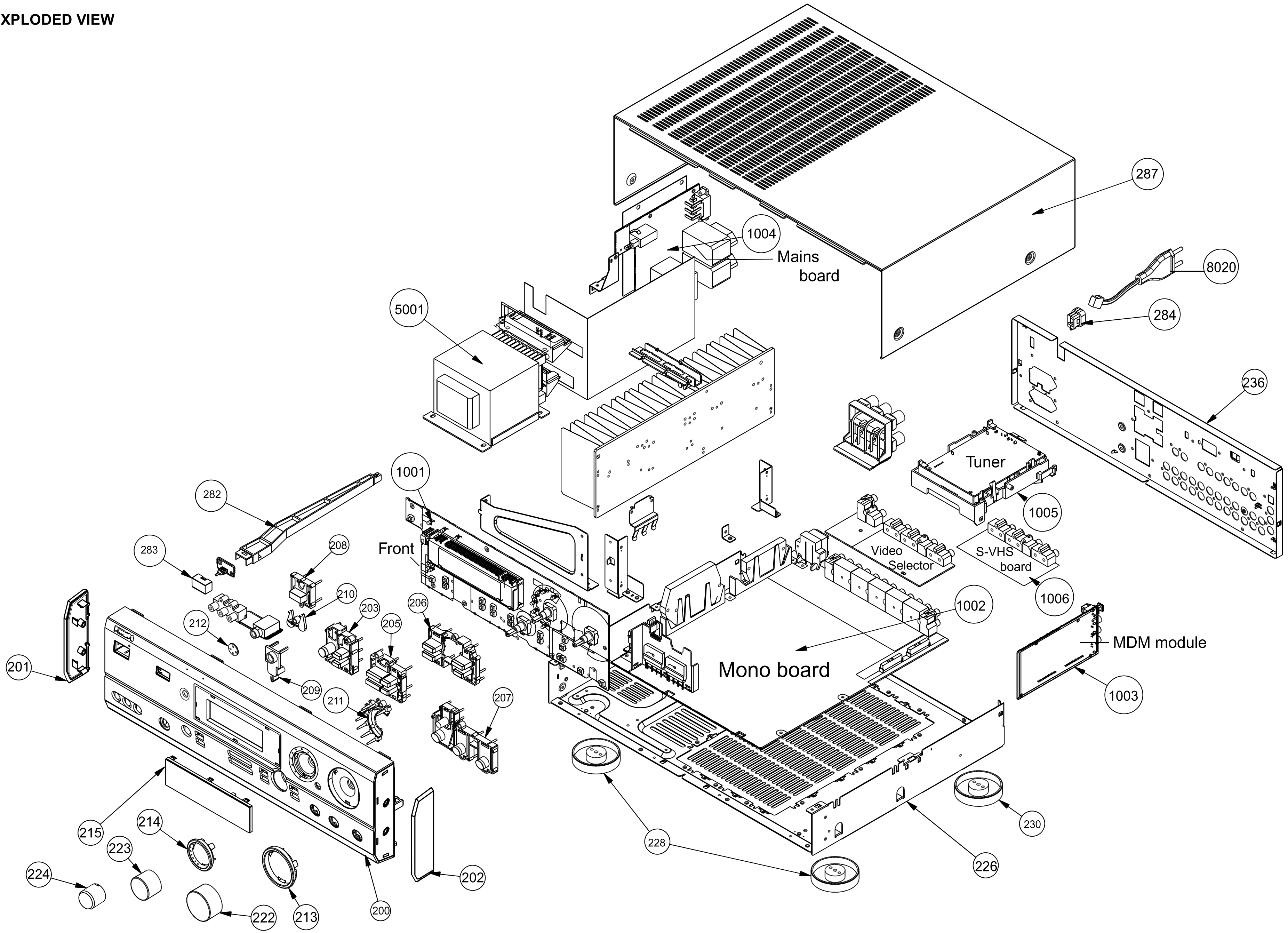
**Mechanical:** the following items are changed into:

| Item | Code number | Description |
|---|---|---|
| 200 | 3104 217 53330 | FRONT CABINET ASSY FR984 |
| 201 | 3141 017 74420 | CAP END LEFT ASSY |
| 202 | 3141 017 74430 | CAP END RIGHT ASSY |
| 203 | 3141 017 74440 | BUTTON ASSY SURROUND |
| 205 | 3141 017 74450 | BUTTON ASSY TUNER |
| 206 | 3141 017 74460 | BUTTON ASSY MENU |
| 207 | 3141 017 74600 | BUTTON ASSY BASS |
| 208 | 3141 017 74480 | BUTTONS EASY LINK ASSY |
| 209 | 3141 017 75200 | RING SURROUND ASSY |
| 210 | 3141 014 24200 | LIGHT GUIDE VIRTUAL/HALL |
| 211 | 3141 014 24210 | LIGHT GUIDE SELECTOR |
| 212 | 3141 014 24290 | LENS IR |
| 213 | 3141 017 74490 | RING KNOB VOLUME ASSY |
| 214 | 3141 017 74500 | RING KNOB SOURCE SEL. |
| 215 | 3141 017 74350 | WINDOW DISPLAY ASSY |
| 222 | 3141 017 74520 | KNOB VOLUME ASSY |
| 223 | 3141 017 74530 | KNOB SOURCE SEL. ASSY |
| 224 | 3141 017 74540 | KNOB MENU NAV ASSY |
| 228 | 3139 247 50570 | LEG SILVER |
| 230 | 3139 247 50560 | LEG BLACK |
| 282 | 4822 535 10638 | POWER ROD |
| 283 | 3141 017 74550 | POWER CAP ASSY |

## EXPLODED VIEW

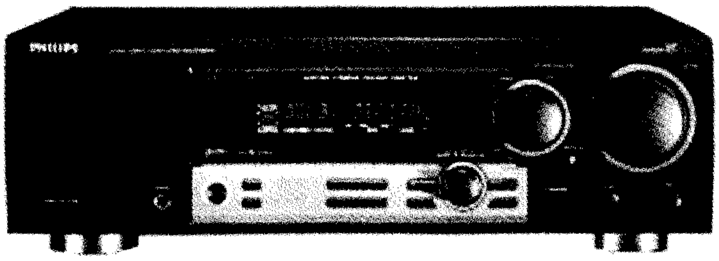

287
1004
Mains board
8020
5001
284
236
Tuner
1001
282
1005
Front
283
208
Video Selector
S-VHS board
210
203
206
1006
205
1002
212
MDM module
201
Mono board
209
211
207
1003
215
214
223
224
222
213
200
202
228
230
226
SCALE 0.250

# DIGITALE A/V SURROUND RECEIVER

# FR965/00

# FR966/00S

Service
Service
Service



# Service Manual

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Safety regulations require that the set be restored to its original condition and that parts which are indentical with those specified be used.

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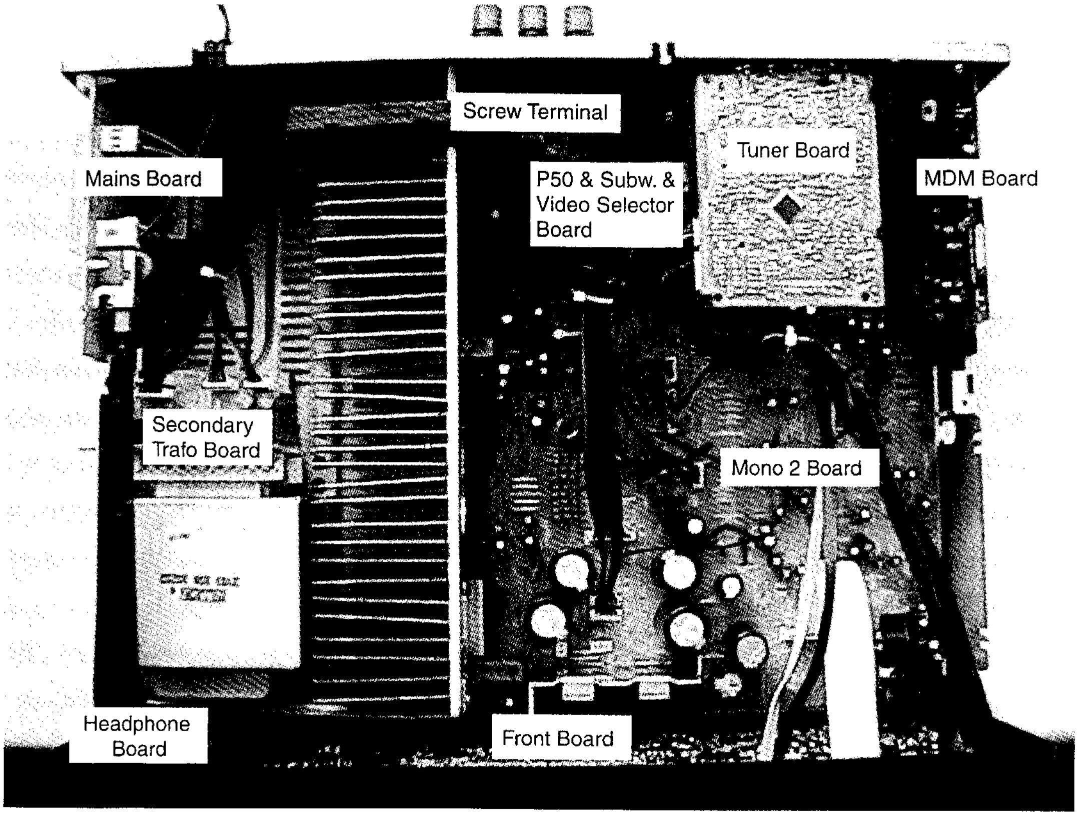
PCS 105 750

PHILIPS

## LOCATION OF PRINTED CIRCUIT BOARDS


Screw Terminal
Tuner Board
Mains Board
P50 & Subw. & Video Selector Board
MDM Board
Secondary Trafo Board
Mono 2 Board
Headphone Board
Front Board

## VERSION VARIATIONS

| Type & Versions / Features & Board in used | FR965 = FR966 except colour | |
|---|---|---|
| | FR965/00 | FR966/00S |
| Front colour | Black | Silver |

# **SPECIFICATION** FR965/00

## General

Mains voltage : 230V

Mains frequency : 50Hz

Power concumption : ≤ 2W at stby
Dimension. wxhxd : 435x138x350 mm
Remote control : Multibrand/Universal

## Amplifier

Output power
Stereo mode (L+R) :2x60W DIN
(1kHz, 0,7%THD, 6Ω)
Surround mode
L+R : 2x60W (1kHz, 0,7%THD, 6Ω)
Center : 60W (1kHz, 0,7%THD, 6Ω)
Surround Left + Right : 2x60W (1kHz, 0,7%THD, 6Ω)

Distortion (5W)
1kHz : ≤ 0,05%
40Hz -20kHz : ≤ 0,2%

Headphone : 6,3mm stereo jack with switch
Output level : 3V EMF, 60Ω

Crosstalk between source - 1kHz : ≤ -65dB
(1W) 250Hz – 10kHz : ≤ -60dB

Crosstalk between channels -1kHz : ≤ -55dB
(1W) 250Hz – 10kHz : ≤ -50dB

Frequency response : ≤ 10Hz – ≥ 30kHz (-1dB)

Power stage protection : Shortcircuit
: DC (Vout ≥ 10V) for ±1sec
Temperature : Transformer ( ≥140° Celcius)
: Heatsink ( ≥ 140° Celcius)

## Audio Selector

Input sensitivity
Phono : 5mV impedance 47kΩ/220pf
CD : 250mV impedance ≥ 47kΩ
CDR/TAPE : 250mV impedance ≥ 47kΩ
VCR : 250mV impedance ≥ 47kΩ
TV : 250mV impedance ≥ 47kΩ
SAT : 250mV impedance ≥ 47kΩ
6CH/DVD : 250mV impedance ≥ 47kΩ
Output level
CDR/TAPE : 250mV impedance ≤ 1kΩ
VCR : 250mV impedance ≤ 1kΩ
Output level (variable)
Subwoofer pre-out : 800mV impedance ≤ 1kΩ
Center pre-out : 800mV impedance ≤ 1kΩ

## Digital Selector

Input : 2 x cinch
: 1 x optical
Output : 1 x cinch

## Video Selector CVBS

Input sensitivity
DVD/VCR/TV : 1 Vpp impedance 75Ω
Output level
Monitor/VCR : 1 Vpp impedance 75Ω
Frequency response : ≤ 50Hz → ≥ 6MHz

## Tone controle

Loudness
(volume ≤ -20dB Ref: 1kHz=0dB) : 100Hz +6 dB
: 10kHz +2,5 dB
Tone control (Ref: 1kHz=0dB)
: Bass 100Hz -9dB →+9dB
: Treble 10kHz -9dB →+9dB

## Multi Channel Decoder - MDM2000

MPEG5.1 / MPEG 7.1 (7.1 downmix to 5.1)
Dolby Digital (AC-3)
Digital Theater Systems (DTS)
Linear PCM (up to 96kHz, 24 bits resolution)
Automatic audio/data type detection (AC-3,dts,MPEG-2,PCM)
Dolby Pro Logic
MPEG-2 dual mono channel selection I/II
Virtual Dolby Surround (422/423)
Virtual MPEG Digital (522/523)
Virtual Dolby Digital (522/523)
Virtual DTS Surround (522/523)
Multi - Front / Multi - rear / Natural Surround
Digital Bass Management
Parallel Stereo Downmix
Four Stereo (224)
Volume Control
Noise Generator (test tone)
Surround mode selector
Delay Center and Surround Left , Surround Right

## Tuner- (Tuner95)

RDS : Only in /00
FM
Tuning range : 87.5 – 108MHz
Grid : 50kHz
IF frequency : 10.7MHz ±25kHz
Aerial input : 75 Ω coaxial
Sensitivity at 26dB S/N : ≤ 2µv
Selectivity at 300kHz : ≥ 55dB
Image rejection : ≥ 100dB
Distortion at RF=1mV,dev.75kHz : ≤ 0,8%
-3dB Limiting point : ≤ 2µV
Crosstalk at RF=1mV,dev.40kHz : ≥35dB

MW
Tuning range : 531 - 1602kHz
Grid : 9kHz
IF frequency : 450kHz ±1kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : ≤ 1,5mV/m
Selectivity at 9kHz : ≥ 23dB
IF rejection : ≥ 50dB
Image rejection : ≥ 33dB
Distortion at RF=50mV,m=80% : ≤ 3%

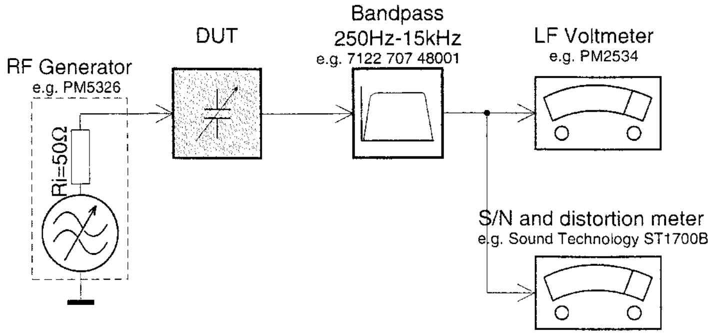
LW only in /00
Tuning range : 153 - 279kHz
Grid : 3kHz
IF frequency : 450kHz ±1 kHz
Aerial input : Frame aerial
Sensitivity at 26dB S/N : ≤ 2,8mV/m
Selectivity at 9kHz : ≥ 26dB
IF rejection : ≥ 100dB
Image rejection : ≥ 45dB
Distortion at RF=50mV,m=80% : ≤ 3%dB

## SERVICE TOOL

Audio Signals Test Disc 1 ................................ 4822 397 30184

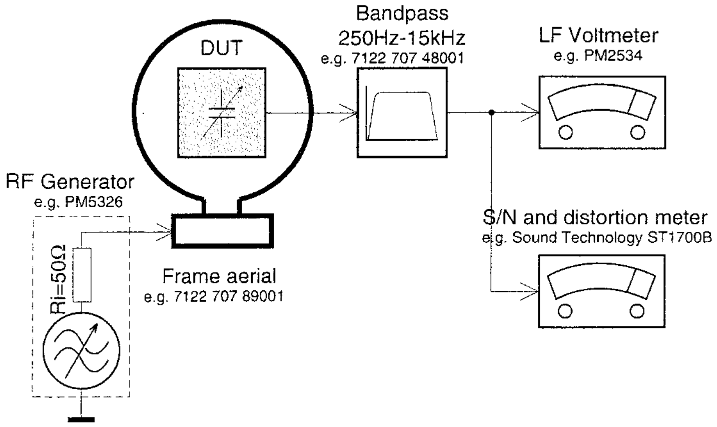
## MEASUREMENT SETUP

### *Tuner FM*


Bandpass
250Hz-15kHz
e.g. 7122 707 48001
DUT
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B

Use a bandpass filter to eliminate hum (50Hz, 100Hz) and disturbance from the pilottone (19kHz, 38kHz).

### *Tuner AM (MW,LW)*


Bandpass
250Hz-15kHz
e.g. 7122 707 48001
DUT
LF Voltmeter
e.g. PM2534
RF Generator
e.g. PM5326
Ri=50Ω
S/N and distortion meter
e.g. Sound Technology ST1700B
Frame aerial
e.g. 7122 707 89001

To avoid atmospheric interference all AM-measurements have to be carried out in a Faraday´s cage.
Use a bandpass filter (or at least a high pass filter with 250Hz) to eliminate hum (50Hz, 100Hz).

## SAFETY

(GB)
Safety regulations require that the set be restored to its original condition and that parts which are identical with those specified be used.
Safety components are marked by the symbol ⚠

(F)
Les normes de sécurité exigent que l´appareil soit remis à l´état d´origine et que soient utilisées les pièces de rechange identiques à celles spécifiées.
Les composants de sécurité sont marqués ⚠

SAFETY

(D)
Bei jeder Reparatur sind die geltenden Sicherheitsvorschriften zu beachten. Der Originalzustand des Gerätes darf nicht verändert werden. Für Reparaturen sind Originalersatzteile zu verwenden.
Sicherheitsbauteile sind durch das Symbol ⚠ markiert.

(NL)
Veiligheidsbepalingen vereisen, dat het apparaat in zijn oorspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast.
De Veiligheidsonderdelen zijn aangeduid met het symbool ⚠

(I)
Le norme di sicurezza estigono che l´apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambiago identici a quelli specificati.
Componenty di sicurezza sono marcati con ⚠

# WARNING

## (GB) WARNING

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically.
When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

## (F) ATTENTION

Tous les IC et beaucoup d´autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévite pourrait être considérablement écourtée par le fait qu´aucune précaution nést prise à leur manipulation.
Lors de réparations, s´assurer de bien être relié au même potentiel que la masse de l´appareil et enfileer le bracelet serti d´une résistance de sécurité.
Veiller à ce que les composants ainsi que les outils que l´on utilise soient également à ce potentiel.

ESD

## (D) WARNUNG

Alle ICs und viele andere Halbleiter sind empfindlich gegenüber elektrostatischen Entladungen (ESD).
Unsorgfältige Behandlung im Reparaturfall kann die Lebensdauer drastisch reduzieren.
Sorgen Sie dafür, daß sie im Reparaturfall über ein Pulsarmband mit Widerstand mit dem Massepotential des Gerätes verbunden sind.
Halten Sie Bauteile und Hilfsmittel ebenfalls auf diesem Potential.

## (NL) WAARSCHUWING

Alle IC´s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD).
Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen vermindern. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiaal als de massa van het apparaat.
Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

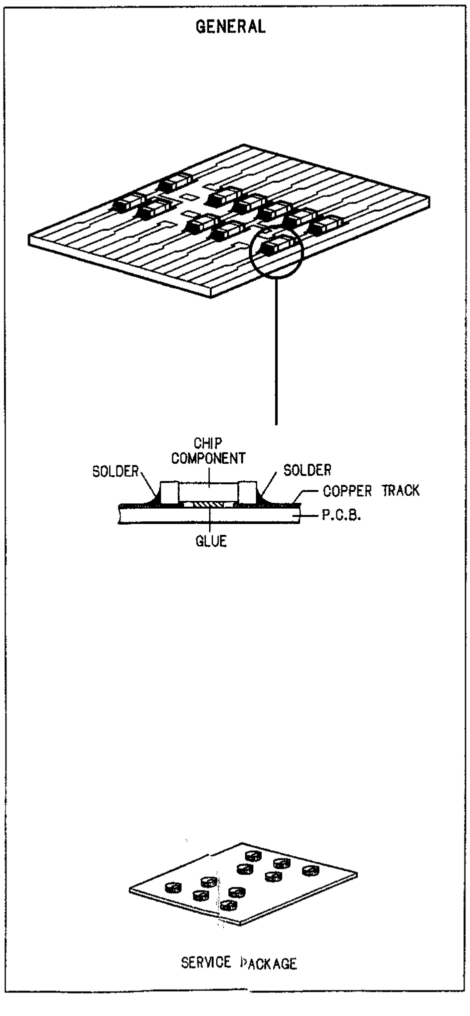
## (I) AVVERTIMENTO

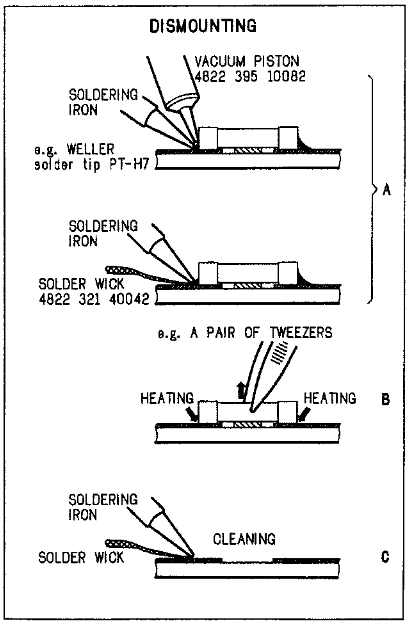
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD).
La loro longevità potrebbe essere fortemente ridatta in caso di non osservazione della più grande cauzione alla loro manipolazione. Durante le riparationi occorre quindi essere collegato allo stesso potenziale che quello della massa delàpparecchio tramite un braccialetto a resistenza.
Assicurarsi che i componenti e anche gi utensili con quali si lavora siano anche a questo potenziale.

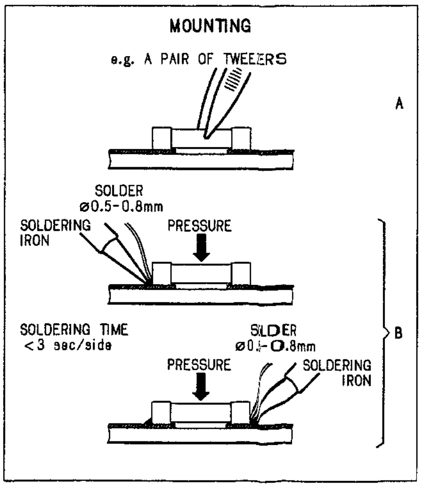
## (GB) AVAILABLE ESD PROTECTION EQUIPMENT :

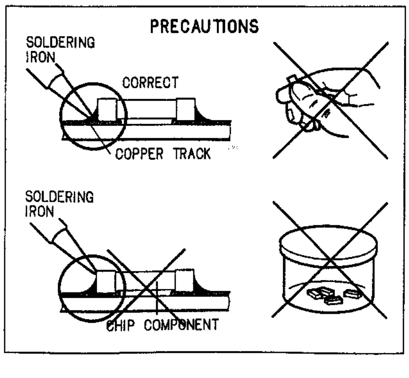
| | |
|---|---|
| anti-static table mat large 1200x650x1.25mm | 4822 466 10953 |
| small 600x650x1.25mm | 4822 466 10958 |
| anti-static wristband | 4822 395 10223 |
| connection box (3 press stud connections, 1M ) | 4822 320 11307 |
| extendible cable (2m, 2M , to connect wristband to connection box) | 4822 320 11305 |
| connecting cable (3m, 2M , to connect table mat to connection box) | 4822 320 11306 |
| earth cable (1M , to connect any product to mat or to connection box) | 4822 320 11308 |
| KIT ESD3 (combining all 6 prior products - small table mat) | 4822 310 10671 |
| wristband tester | 4822 344 13999 |

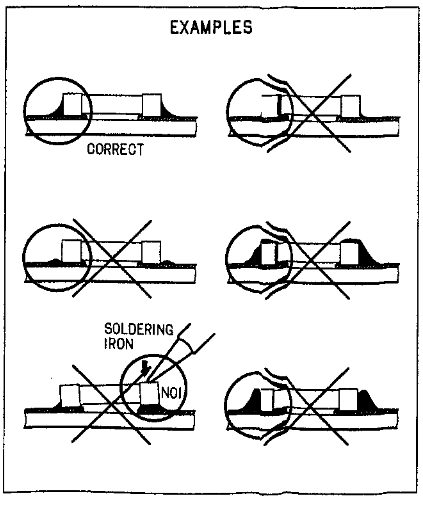
# HANDLING CHIP COMPONENTS


GENERAL
CHIP COMPONENT
SOLDER
SOLDER
COPPER TRACK
P.C.B.
GLUE
SERVICE PACKAGE


DISMOUNTING
VACUUM PISTON
4822 395 10082
SOLDERING IRON
e.g. WELLER solder tip PT-H7
A
SOLDERING IRON
SOLDER WICK
4822 321 40042
e.g. A PAIR OF TWEEZERS
HEATING
HEATING
B
SOLDERING IRON
CLEANING
SOLDER WICK
C


MOUNTING
e.g. A PAIR OF TWEEZERS
A
SOLDER
ø0.5-0.8mm
SOLDERING IRON
PRESSURE
SOLDERING TIME
<3 sec/side
SOLDER
ø0.5-0.8mm
B
PRESSURE
SOLDERING IRON


PRECAUTIONS
SOLDERING IRON
CORRECT
COPPER TRACK
SOLDERING IRON
CHIP COMPONENT


EXAMPLES
CORRECT
SOLDERING IRON
NO!

# ABBREVIATIONS

*A*

| | |
|---|---|
| ac 0VA | AC 0 Voltage |
| ac 10VB | AC 10 Voltage |
| ac 110VB | AC 110 Voltage |
| ac 120VB | AC 120 Voltage |
| ac gnd | AC ground |
| ac h1 | AC high voltage 1 |
| ac h2 | AC high voltage 2 |
| ac l1 | AC low voltage 1 |
| ac l2 | AC low voltage 2 |
| ac1 | AC voltage 1 |
| ac2 | AC voltage 2 |
| ac3 | AC voltage 3 |
| amp lr on | Amplifier Left - Right On |
| amp mute c s | Amplifier mute center surround |
| amp mute c s sub | Amplifier mute center surround subwoofer |
| amp mute lr | Amplifier mute Left - Right |
| amp pd | Amplifier power down |
| amp prot | Amplifier protection |
| amp s on | Amplifier surround On |
| amp stby | Amplifier Standby |
| av gnd | Audio ground |
| av l | Audio Left |
| av r | Audio Right |
| A/V | Audio/Video |

*F*

| | |
|---|---|
| f1 | Filament 1 |
| f2 | Filament 2 |
| fmute | Fast mute |

*G*

| | |
|---|---|
| gnd d | Ground digital |
| gnd s | Ground signal |

*H*

| | |
|---|---|
| hp gnd | Headphone ground |
| hp l | Headphone Left |
| hp on | Headphone On |
| hp r | Headphone Right |
| hst | Heatsink temperature |

*L*

| | |
|---|---|
| ls c | Loudspeaker Center |
| ls gnd | Loudspeaker ground |
| ls l | Loudspeaker Left |
| ls r | Loudspeaker Right |

*M*

| | |
|---|---|
| mdm | Multi channel Decoding Module |
| mdm c out | — Center out |
| mdm gnd | — ground |
| mdm l dmix | — Downmix Left |
| mdm l in | — Left in |
| mdm l out | — Left out |
| mdm r dmix | — Downmix Right |
| mdm r in | — Right in |
| mdm r out | — Right out |
| mdm req | — request |
| mdm rst | — reset |
| mdm scl | — I$^2$C clock |
| mdm sda | — I$^2$C data |
| mdm sl out | — surround Left out |
| mdm sr out | — surround Right out |
| mdm sub out | — subwoofer out |
| mfd | Mains failure detection |

*P*

| | |
|---|---|
| p gnd | P50 ground |
| p p50 | Cinema link P50 code |

*S*

| | |
|---|---|
| s gnd | Surround ground |
| sofac scl | Sofac I$^2$C clock |
| sofac1 sda1 | Sofac 1 I$^2$C data1 |
| sofac2 sda2 | Sofac 2 I$^2$C data2 |
| ss ce | Source selector chipenable |
| ss clk | Source selector clock |
| ss data | Source selector data |
| surr pre-out | Surround pre-out |

*T*

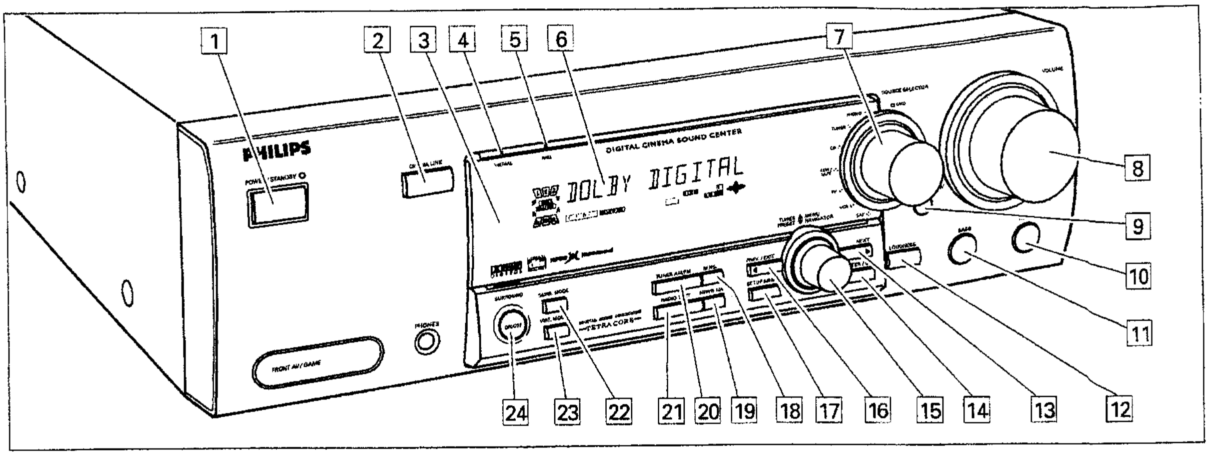
| | |
|---|---|
| tu clk | Tuner clock |
| tu da | Tuner data |
| tu en | Tuner enable |
| tu gnd | Tuner ground |
| tu l | Tuner Left |
| tu r | Tuner Right |
| tu rds | Tuner RDS |
| tu stereo | Tuner stereo |

*V*

| | |
|---|---|
| v gnd | Video ground |
| v scl | Video I$^2$C clock |
| v sda | Video I$^2$C data |
| v sig | Video signal |
| v sub sur | Video subwoofer surround |

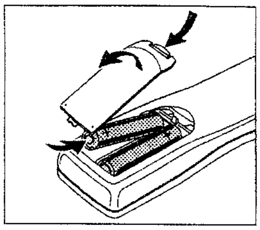
# INSTRUCTIONS FOR USE

## *CONTROLS*



| | | |
|---|---|---|
| 1 | **POWER / STANDBY** | Switches the receiver on and off. |
| 2 | **CINEMA LINK** | Switches the system control bus between the receiver and the TV. on and off. |
| 3 | | Sensor for the infrared remote control. |
| 4 | **VIRTUAL** | Control light for virtual surround. |
| 5 | **HALL** | Control light for HALL. |
| 6 | | Display |
| 7 | **SOURCE SELECTOR** | Selects the different audio and video connectors. |
| 8 | **VOLUME** | Increases and decreases the volume level. |
| 9 | **FRONT AV** | Selects the FRONT AV / GAME input (FR 975 only). |
| 10 | **TREBLE** | Adjusts the treble when used in combination with VOLUME. |
| 11 | **BASS** | Adjusts the bass when used in combination with VOLUME. |
| 12 | **LOUDNESS** | Switches LOUDNESS on and off. |
| 13 | **NEXT ▶** | TUNER: searches radio stations.<br>MENU: switches to the next menu level. |
| 14 | **ENTER / OK** | Confirms selected menu values. |
| 15 | **TUNER PRESET ⬍ MENU NAVIGATOR** | TUNER: switches to the next and previous stored radio station.<br>MENU: moves upwards and downwards. |
| 16 | **◀ PREV. / EXIT** | TUNER: searches radio stations.<br>MENU: switches to the previous menu level. |
| 17 | **SETUP MENU** | Switches the menu on and off. |
| 18 | **SENS.** | Switches between low and high tuner sensitivity. |
| 19 | **NEWS/TA** | Switches the RDS news and RDS traffic announcement on and off. |
| 20 | **TUNER AM/FM** | Switches the wavebands of the tuner. |
| 21 | **RADIO TEXT** | Scrolls through the different RDS information. |
| 22 | **SURR. MODE** | Switches through the different speaker configurations. |
| 23 | **VIRT. MODE** | Scrolls through the different virtual surround sound modes. |
| 24 | **SURROUND ON/OFF** | Switches between the last selected surround mode and stereo. |

## Remote control usage



Open the battery compartment of the remote control and insert 2 alkaline batteries, type **AA** (R06, UM-3).

Remove batteries if they are flat or the remote control is not going to be used for a long time.

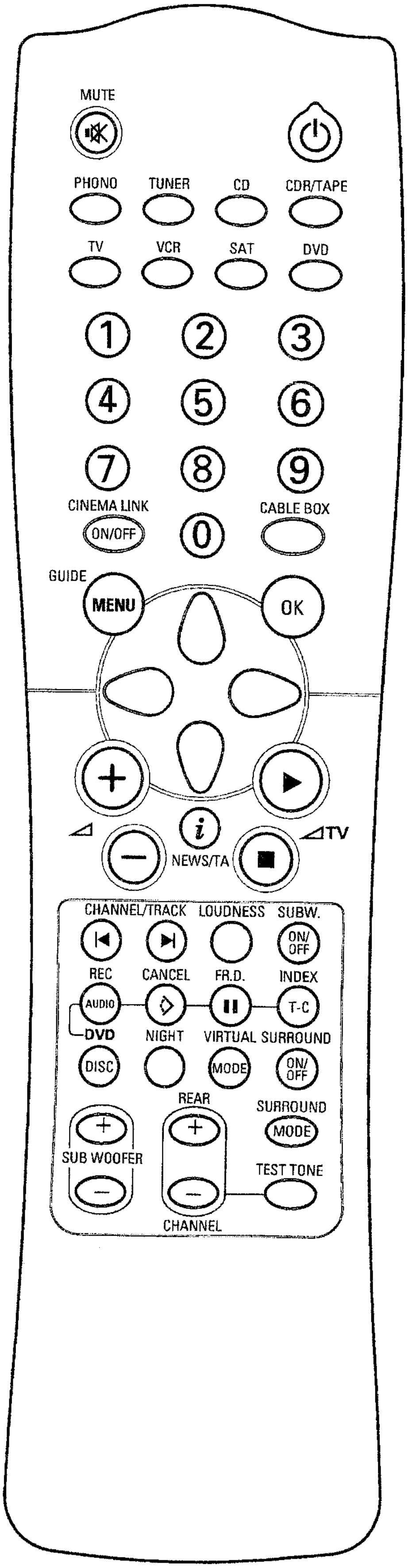
***Batteries contain chemical substances, so they should be disposed of properly.***

The buttons on the remote control work the same way as the corresponding ones on the receiver.

### *Important!*

*You have to press a source button for longer than 1 second to switch the sound source on the receiver. Pressing a source button for less than 1 second will only switch the remote control to use the commands for the selected product.*

*The remote control remains tuned to the selected source until another source button on the remote control is pressed. This enables you to operate additional sources (i. e. winding a tape) without changing the source on the receiver.*


MUTE
PHONO
TUNER
CD
CDR/TAPE
TV
VCR
SAT
DVD
1
2
3
4
5
6
7
8
9
CINEMA LINK
ON/OFF
0
CABLE BOX
GUIDE
MENU
OK
+
i
TV
NEWS/TA
CHANNEL/TRACK
LOUDNESS
SUBW.
ON/OFF
REC
CANCEL
FR.D.
INDEX
AUDIO
T-C
DVD
NIGHT
VIRTUAL SURROUND
DISC
MODE
ON/OFF
REAR
SURROUND
+
+
MODE
SUB WOOFER
TEST TONE
CHANNEL

## Remote control buttons

| | |
|---|---|
| 🔇 MUTE | Mutes the sound of the receiver. |
| ⏻ | Switches the receiver to standby. |
| PHONO, TUNER, CD, CDR/TAPE, TV, VCR, SAT, DVD | Switches the remote control to the commands of the different products. Selects the sources if pressed longer than 1 second. SAT only works with *digital* satellite receivers. |
| 1–0 | Keys in numbers for tracks, stations or frequencies. Numbers consisting of two figures must be keyed in within 2 seconds. |
| CINEMA LINK ON/OFF | Switches the system connection between the receiver and the TV on and off. |
| CABLE BOX | Without function. |
| **MENU** GUIDE | **TUNER:** Switches the receiver menu on and off.<br>**DVD, TV:** Switches the DVD/TV menu on and off. |
| OK | Confirms menu options. |
| Arrow buttons | **TUNER:** Moves in the menus. Right/left arrows are tuning up/down.<br>**CD, CDR:** Left/right arrows are searching backwards/forwards, up/down arrows are selecting the next/previous track. |
| + ⊿ | Increases the receiver volume. |
| − ⊿ | Decreases the receiver volume. |
| ℹ NEWS/TA | Switches the functions NEWS and TRAFFIC ANNOUNCEMENT on and off.<br>**TV:** Switches teletext on and off.<br>**SAT:** Switches the information text on and off. |
| ▶ ⊿**TV** | Increases the TV volume.<br>**CD, CDR, VCR, DVD:** Starts playback. |
| ■ ⊿**TV** | Decreases the TV volume.<br>**CD, CDR, VCR, DVD:** Stops playback. |
| ⏮ CHANNEL/TRACK | Selects the previous preset tuner station.<br>**VCR:** Rewinds the tape.<br>**CD, CDR, DVD:** Selects the previous track.<br>**TV:** Selects the previous channel. |
| ⏭ CHANNEL/TRACK | Selects the next preset tuner station.<br>**VCR:** Fast forwards the tape.<br>**CD, CDR, DVD:** Selects the next track.<br>**TV:** Selects the next channel. |
| LOUDNESS | Switches LOUDNESS on and off. |
| SUBW. ON/OFF | Switches the subwoofer on and off. |
| REC, DVD AUDIO | **CDR, VCR:** Starts recording.<br>**DVD:** Switches audio tracks. |
| CANCEL, DVD ◊ | **CD, CDR, SAT, VCR:** Clears a program, cancels selections.<br>**DVD:** Switches the view angle. |
| FR.D., DVD ❚❚ | **TUNER:** Switches to FREQUENCY DIRECT.<br>**CD, CDR, VCR, DVD:** Pauses playback. |
| INDEX, DVD T-C | **VCR:** Switches the index search on and off.<br>**SAT:** Switches the themes on and off.<br>**DVD:** Switches between title and chapter. |
| DISC | **CD-, CDR-, DVD-Changers:** Switches to the next disc. |
| NIGHT | Switches NIGHT MODE on and off. |
| VIRTUAL MODE | Scrolls through the different virtual surround sound modes. |
| SURROUND ON/OFF | Switches SURROUND SOUND on and off. |
| +/− SUBWOOFER | Increases/decreases the subwoofer volume. |
| +/− REAR | Increases/decreases the volume of the rear speakers. While test tone is on, the volume of the speakers you are hearing can be increased/decreased with these buttons. |
| SURROUND MODE | Scrolls through the different surround modes. |
| TEST TONE | Switches the test tone on and off. While test tone is on, the volume of the speakers you are hearing can be increased/decreased with +/− REAR. |

## Programming the universal remote control

You can identify the universal remote control by the inscription Multibrand/Universal.

The universal remote control must be programmed to use the codes for your appliances of different brands. This is done by keying in a 4-digit code or by scanning the codes until the correct one is found. We recommend to using the 4-digit code. This method is faster and more reliable. The code scanning method should only be used if you cannot find the code for one of your appliances. The code table can be found at the end of the booklet.

***Important!***
*The buttons of the remote control must be used for programming, not the buttons of the receiver or other appliances.*

**Programming with the 4-digit code**

1 Keep the source button for the appliance which should be controlled and ⏻ pressed for 3 seconds.

2 Key in the 4-digit code for the appliance (codetable at the end of the booklet).

Notes: – *If more than 4 digits are entered, the remote control will recognize only the ones keyed in first.*
– *If you do not key in a code within 30 seconds the remote control will switch off the programming function without changing the code.*
– *To program a new appliance, simply overwrite the old code by entering a new one.*

**Scanning the codetable**

1 Switch on the appliance which should be controlled.

2 Keep the source button for the appliance which should be controlled and ⏻ pressed for 3 seconds.

3 Press and release ⏻ again.
→ The remote control sends the codes for channel up or standby (depending on the selected source) for one brand after the other.

4 As soon as the appliance reacts – switches to the next channel or to standby – press ⏻ to confirm the code.
→ The identified code will be used.

- If the set does not react within 2 minutes, the code for this appliance is not stored in the remote control. The code of the remote control will remain unchanged.

Note: *When taking out the batteries of the remote control for more than 1 minute the codes must be reprogrammed.*

Once you have found and tested the codes for your various appliances, you may want to write them down here.

PHONO .........................................

TUNER .........................................

CD ...............................................

CDR/TAPE ....................................

TV ................................................

VCR .............................................

SAT ..............................................

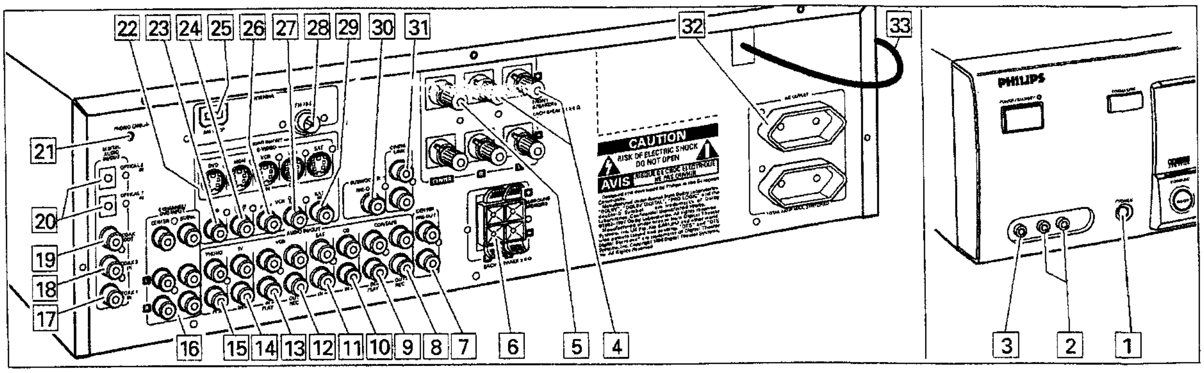
DVD .............................................

**Resetting the remote control**

1 Keep one of the source buttons and ⏻ pressed for 3 seconds.

2 Key in the 3-digit code 981.
→ The remote control is now reset to all its original Philips codes.

## CONNECTORS

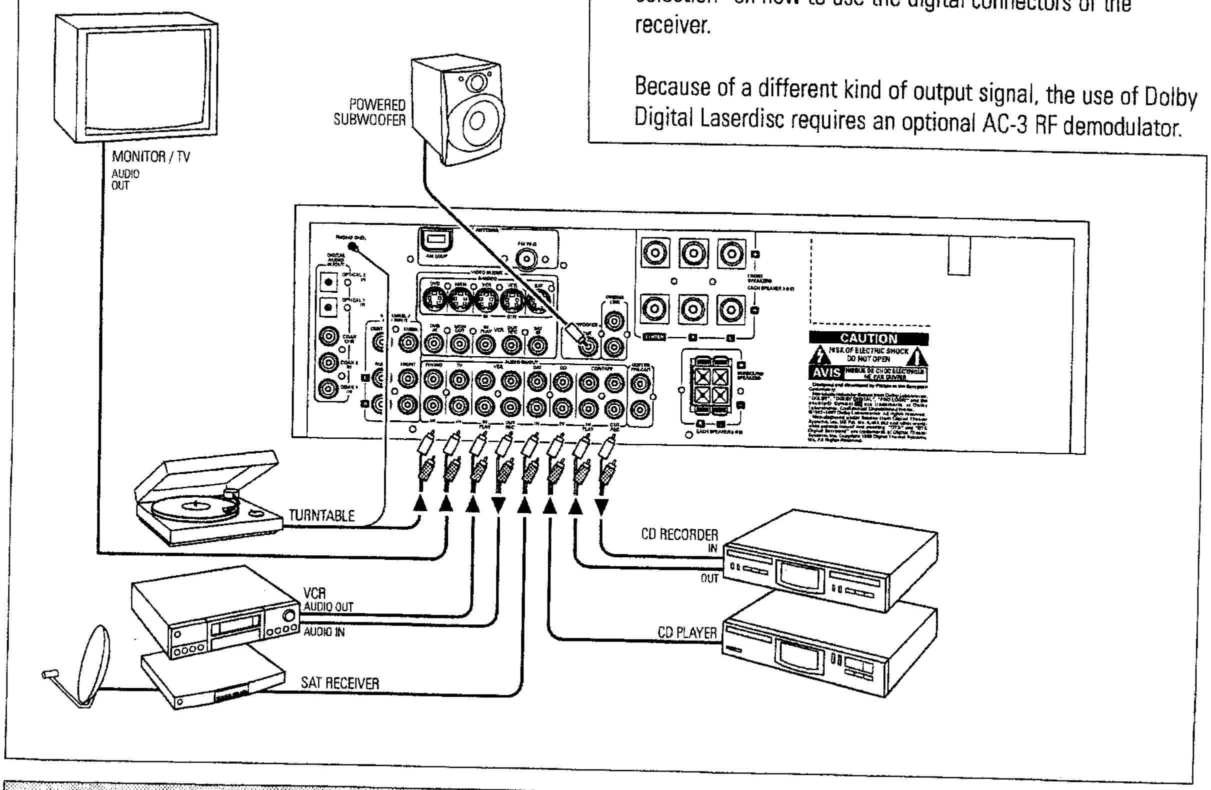


| Connectors | Connectors name | Connect to: |
|---|---|---|
| 6.3 mm headphone socket at the front | **1 PHONES** | A headphone with a 6.3 mm plug. |
| Audio and video inputs at the front (FR 975 only) | **2 FRONT AV / GAME** | Left and right audio out sockets of appliances such as video cameras and game consoles. |
| | **3 FRONT AV / GAME** | Video out sockets of appliances such as video cameras and game consoles. |
| FRONT SPEAKERS | **4 R, L** | Right and left front speaker. |
| | **5 CENTER** | Center speaker. |
| SURROUND SPEAKERS | **6 R, L** | Right and left surround speaker. |
| AUDIO IN/OUT | **8 CDR/TAPE OUT** | Input of a CD recorder or a tape deck. |
| | **9 CDR/TAPE IN** | Output of a CD recorder or a tape deck. |
| | **10 CD IN** | Output of a CD player. |
| | **11 SAT IN** | Output of a satellite system. |
| | **12 VCR OUT** | Input of a video recorder. |
| | **13 VCR IN** | Output of a video recorder. |
| | **14 TV IN** | Output of a TV. |
| | **15 PHONO IN** | Output of a turntable with MM coil. |
| | **21 PHONO GND ⏚** | Ground cable of a turntable. |
| 6 CHANNEL / DVD INPUT | **16 6 CHANNEL / DVD INPUT** | 6 channel output of appliances such as DVD or laserdisc players. |
| DIGITAL AUDIO IN/OUT | **17 COAX 1 IN** | Coaxial output of digital appliances (default input for source DVD). |
| | **18 COAX 2 IN** | Coaxial output of digital appliances. |
| | **19 COAX OUT** | Coaxial input of digital appliances such as CD recorders or MD recorders. |
| | **20 OPTICAL IN** | Optical output of digital appliances such as DVD players, CD players, CD recorders or MD players (FR 965 only). |
| | **20 OPTICAL 1 (2) IN** | Optical output of digital appliances such as DVD players, CD players, CD recorders or MD players (FR 975 only). |
| VIDEO IN/OUT | **22 S-VIDEO** | S-Video inputs/outputs of video appliances for better video quality (FR 975 only). |
| | **23 DVD IN** | Output of a DVD player. |
| | **24 MON OUT** | Input of a monitor (e. g. the TV). |
| | **26 VCR IN** | Output of a video recorder. |
| | **27 VCR OUT** | Input of a video recorder (for recording). |
| | **29 SAT IN** | Output of a satellite system. |
| Antenna connectors | **25 AM LOOP** | Frame antenna supplied. |
| | **28 FM 75 Ω** | Wire antenna supplied or exterior antenna. |
| Preamplified outputs | **7 CENTER PRE-OUT** | Input of a TV when it is used as the centre speaker (only possible when the CINEMA LINK system bus is connected). |
| | **30 SUBWOOFER PRE-OUT** | Input of a powered subwoofer. |
| System control bus | **31 CINEMA LINK** | System control bus sockets of a Philips TV with CINEMA LINK. |
| Mains outlets (not on all versions) | **32 AC OUTLET** | Supplies same voltage as mains. Up to 100 W total permitted load. |
| Mains lead | 33 | ***After all other connections have been made***, connect the mains lead to the wall socket. |

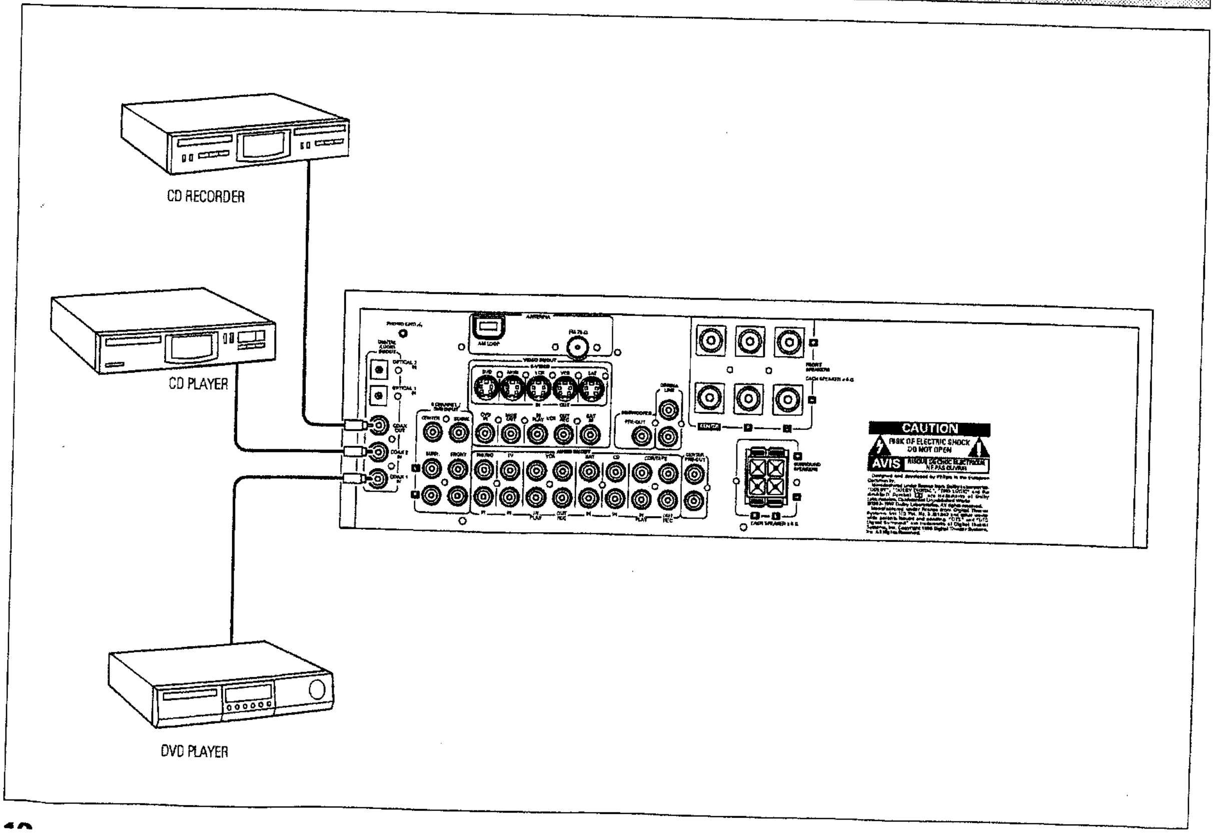
## Analogue audio connections

There are analogue and digital connectors available on some appliances. If possible use the digital connection; usually this will result in better sound quality. See "Reassigning a source selection" on how to use the digital connectors of the receiver.

Because of a different kind of output signal, the use of Dolby Digital Laserdisc requires an optional AC-3 RF demodulator.


POWERED SUBWOOFER
MONITOR / TV
AUDIO OUT
CAUTION
AVIS
TURNTABLE
CD RECORDER
IN
OUT
VCR
AUDIO OUT
AUDIO IN
CD PLAYER
SAT RECEIVER

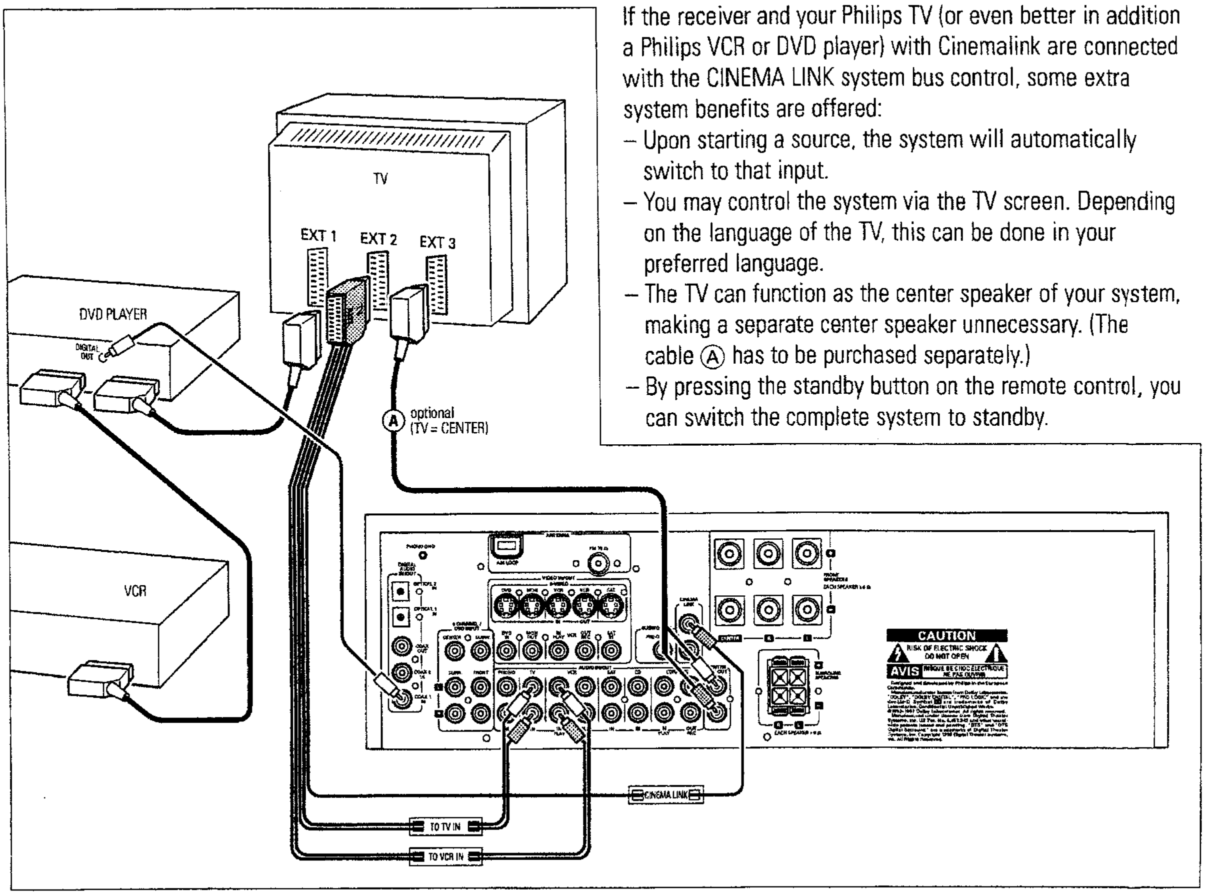
## Digital audio connections


CD RECORDER
CD PLAYER
CAUTION
AVIS
DVD PLAYER

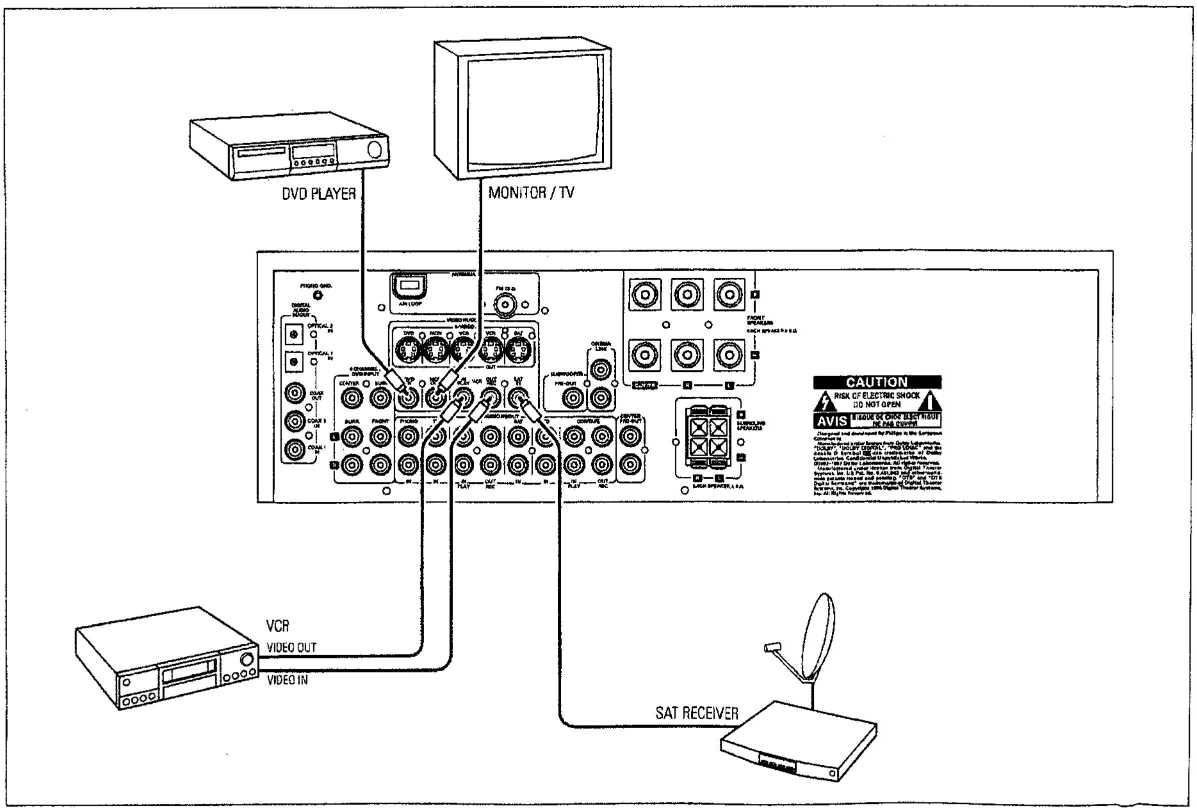
## System control bus, CINEMA LINK

If the receiver and your Philips TV (or even better in addition a Philips VCR or DVD player) with Cinemalink are connected with the CINEMA LINK system bus control, some extra system benefits are offered:

- Upon starting a source, the system will automatically switch to that input.
- You may control the system via the TV screen. Depending on the language of the TV, this can be done in your preferred language.
- The TV can function as the center speaker of your system, making a separate center speaker unnecessary. (The cable Ⓐ has to be purchased separately.)
- By pressing the standby button on the remote control, you can switch the complete system to standby.


TV
EXT 1
EXT 2
EXT 3
DVD PLAYER
DIGITAL OUT
VCR
Ⓐ optional (TV = CENTER)
CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN
AVIS
CINEMA LINK
TO TV IN
TO VCR IN

## Video connections


DVD PLAYER
MONITOR / TV
CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN
AVIS
VCR
VIDEO OUT
VIDEO IN
SAT RECEIVER

## Mains

***The type plate is located on the rear of the receiver.***

1. Check whether the mains voltage as shown on the type plate corresponds to your local mains voltage. If it does not, consult your dealer or service organization.

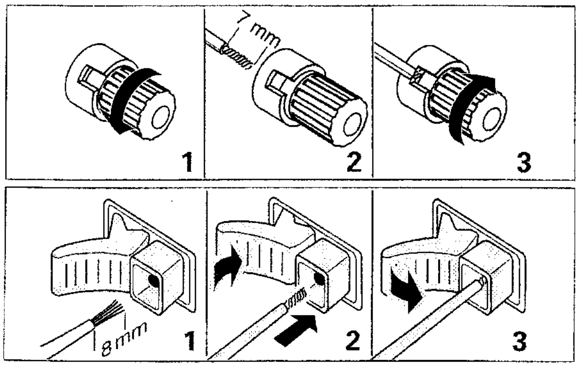
2. Connect the mains cable to the wall socket.

To disconnect the set from the mains completely, remove the mains plug from the wall socket.

**For users in the U. K.: please follow the instructions on page 2.**

## Speaker connections

Some of the speaker connections on the receiver are screw connectors and some are click-fit connectors. Use them as shown below.



1. Always connect the coloured (or marked) wire to the coloured terminal and the black (or unmarked) wire to the black terminal.

2. Connect:
   - Left front speaker to L (red and black)
   - Right front speaker to R (red and black)
   - Center speaker to CENTER (blue and black)
   - Left surround speaker to SURROUND L (grey and black)
   - Right surround speaker to SURROUND R (grey and black)

## TV as the center speaker

You may use your Philips TV with CINEMA LINK as the center speaker. For TVs with a scart connector an additional audio cinch-to-scart cable is needed. For TV's with cinch connectors additional cinch cables are needed. These cables must be connected to the blue CENTER PRE-OUT connector on the back. Look into the instruction manual of your TV on how to use it as the center speaker.

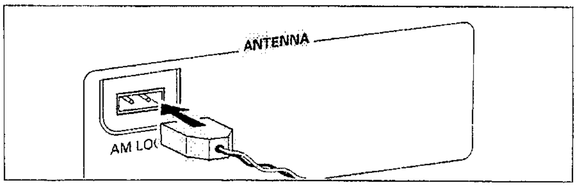
## Antenna connections

### AM (MW) antenna

The loop antenna supplied is for indoor use only. Position the antenna as far away as possible from the receiver, the TV, the cables, a DVD player, a VCR and other radiation sources.

1. Fit the plug of the frame antenna to AM LOOP as shown below.

2. Turn the antenna for optimum reception.



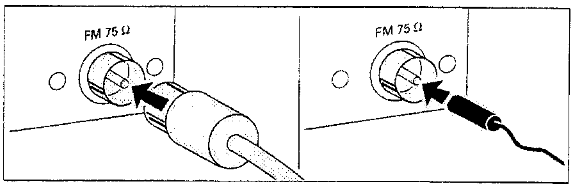
### FM antenna

The wire antenna supplied can only be used to receive nearby stations. For better reception we recommend using a cable antenna system or an outdoor antenna.

1. Fit the supplied wire antenna to FM 75 Ω as shown below.

2. Move the antenna in different positions for optimum reception.

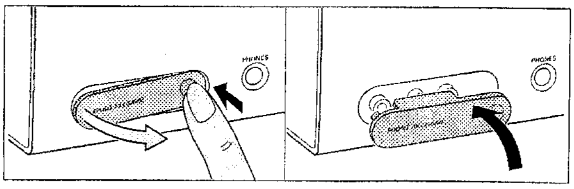
- If you are using a cable antenna system or an outdoor antenna, fit the antenna plug to FM 75 Ω instead of the wire antenna.

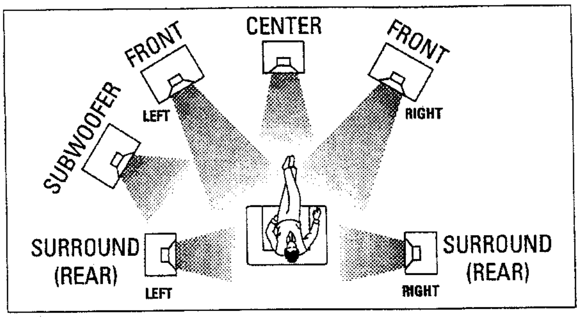


## FRONT AV / GAME cap (FR 975 only)

- To remove the FRONT AV / GAME cap, press on the right side of the cap.

- Insert the cap from below to close the compartment.





## Positioning of the speakers

### General hints for positioning

Avoid positioning the speakers in a corner or on the floor as this will boost the bass tones too much. Placing the speakers behind curtains, furniture, etc. will reduce the treble response. The listener should always be able to "see" the speakers.

Each room has different acoustic characteristics and the positioning possibilities are often limited. You can find the best position for your speakers by referring to the picture above.

As a minimum we recommend 5 speakers (2 front, a center, 2 surround) for good surround sound. It is possible to reproduce some kind of surround sound with fewer speakers. This is done by redirecting the signals which are foreseen for the missing speakers to the existing ones. See "Menus" on how to set up the receiver correctly for the number and size of the speakers used.

### Positioning the front speakers

The front speakers should be placed right and left in front of the listening position like usual stereo speakers.

### Positioning the center speaker

The center speaker should be placed in the center between the two front speakers, e. g. underneath or on top of the TV. The best height for the center speaker is the height of the listener's ears (while seated).

### Positioning the surround speakers

The surround speakers should face each other and be in line with, or slightly behind the listener.

### Positioning the subwoofer

A subwoofer can be used to enhance the bass performance of your system dramatically. The subwoofer can be positioned anywhere in the room, because it is not possible to locate the source of deep tones. Nevertheless, you should not place the subwoofer in the middle of a room, since the bass could be severely weakened. Do not place any object on the subwoofer.

## Speaker setup and testing

The relative volume of the speakers must be adjusted for optimal surround sound. You should be at your usual listening position when adjusting the speaker volume. See "Receiver menus" on how to set up the receiver for the used speakers. Ideally, the volume in the listening position should be the same from all speakers.

1 Press POWER / STANDBY to switch on the receiver.

2 Press TEST TONE on the remote control.
→ A test tone coming from the different speakers, except the subwoofer, is heard.

3 Press + / − REAR on the remote control to increase/decrease the volume of the actual speaker. The best result is achieved when all speakers have equal volume in the listening position.

4 Press TEST TONE on the remote control.
→ The test tone stops.

*Note: If you are not completely satisfied with the volume settings, we recommend making minor adjustments to them during surround sound playback.*

## Power handling

If the receiver is used at very high power it can produce distortions which may seriously damage your speakers. If distortions occur, reduce the volume and the tone controls to a level where the sound is acceptable again.

***To avoid overheating of the set a safety circuit has been built in. Therefore your set may disconnect under extreme conditions. If this happens, switch the set off and let it cool down before reusing it.***

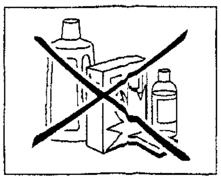
## Headphones

Connecting headphones to PHONES will switch off the speakers. The receiver switches to STEREO and surround sound will be reduced to a stereo signal which is reproducible by standard headphones.

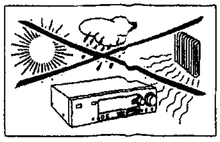
Disconnecting the headphones switches on the speakers again. If you wish to enjoy surround sound again, switch the receiver back to surround sound.

## Maintenance

Clean the receiver with a soft, slightly dampened, lint-free cloth. Do not use any cleaning agents as they may have a corrosive effect.



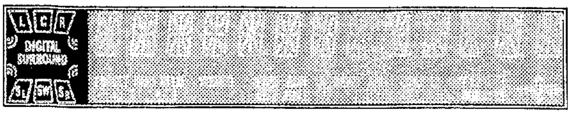
Do not expose the receiver to humidity, rain, sand or excessive heat (caused by heating equipment or direct sunlight).



## Display

The display of the receiver is divided into 4 sections, which are to be used for the following:

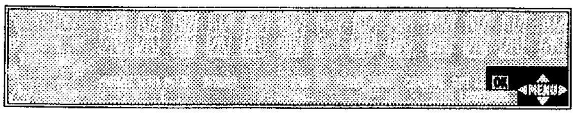
### Speaker diagram



A rectangle with a letter in it shows that a speaker has been selected in the setup menu. However, the subwoofer indicator will only light when a subwoofer signal is available. If only a letter is shown, this speaker is not used and its sound is reproduced by the other speakers.

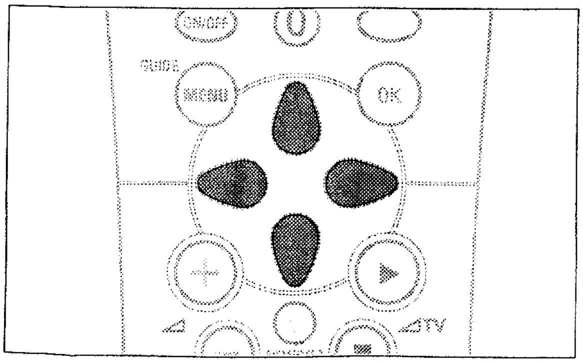
| | |
|---|---|
| **)) ((** | virtual surround sound |
| **SURROUND** | surround sound is reproduced |
| **DIGITAL SURROUND** | digital surround sound is reproduced |
| **L, R** | front left and right speaker |
| **C** | center speaker |
| **SL, SR** | surround speakers |
| **SW** | subwoofer |

### Menu indication

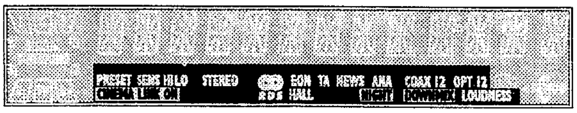


These signs show you if the menu is on or off and indicate in which direction you may move.

| | |
|---|---|
| **MENU** | menu is on |
| ◀ | You may move backwards to the previous menu topic using ◀ PREV. / EXIT ("left" key on the remote control). |
| ▲ | You may move up in an option list using ⬍ MENU NAVIGATOR ("up" key on the remote control). |
| ▼ | You may move down in an option list using ⬍ MENU NAVIGATOR ("down" key on the remote control). |
| ▶ | You may move forward to the next menu topic using NEXT ▶ ("right" key on the remote control). |
| **OK** | You may confirm the displayed value. |



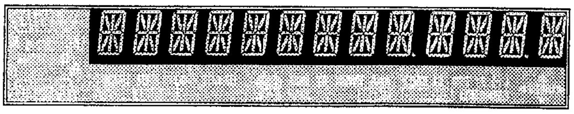
### Status lights


PRESET SENS HI LO STEREO EON TA NEWS ANA COAX 1 2 OPT 1 2
CINEMA LINK ON RDS HALL NIGHT DOWNMIX LOUDNESS

Signs showing you various settings and information about the status of the receiver.

| | |
|---|---|
| **PRESET** | Tuner is tuned to a preset radio station. |
| **SENS HI** | Tuner is switched to high sensitivity. |
| **SENS LO** | Tuner is switched to low sensitivity. |
| **CINEMA LINK ON** | CINEMA LINK is active |
| **STEREO** | An FM station is being received in stereo. |
| **RDS** | An RDS station is being received. |
| **EON** | An RDS station with EON is being received. |
| **HALL** | HALL effect is on. |
| **TA** | RDS traffic announcement is on |
| **NEWS** | RDS news announcement is on |
| **ANA** | Analogue input is being used for the playing source. |
| **NIGHT** | NIGHT MODE is on. |
| **COAX 1** | Coaxial digital input COAX 1 is being used for the playing source. |
| **COAX 2** | Coaxial digital input COAX 2 is being used for the playing source. |
| **DOWNMIX** | Incoming multi channel signals are being reduced to fewer output signals (depending on the number of speakers). |
| **OPT** | Optical digital input OPTICAL IN is being used for the playing source (FR 965 only). |
| **OPT 1** | Optical digital input OPTICAL 1 IN is being used for the playing source (FR 975 only). |
| **OPT 2** | Optical digital input OPTICAL 2 IN is being used for the playing source (FR 975 only). |
| **LOUDNESS** | LOUDNESS is switched on. |

### Information area



This area is used for feedback of the receiver, tuner frequencies, menu options, values and scrolling text messages.

## Receiver menu

The receiver is equipped with a menu system. The menu is used for the setup of the receiver. The different menu options are related to each other in a logical way. Let's assume you have no center speaker connected, and therefore switched CENTER SPEAKR to NO. If you try to use VOL CENTER, a message will be scrolled that this is not possible (INSTALL CENTER SPEAKER).

The menu always works the same way. Arrows in the display show you the possible moving directions.

**1** Press SETUP MENU.
→**MENU**, and ✱ EFFECTS is displayed.

- **You can exit the menu at any time by pressing SETUP MENU.**

**2** Turn ⇕ MENU NAVIGATOR until the desired option (or a value) is displayed.

**3** Press NEXT ▶ to choose the displayed option (or ENTER / OK to confirm a value).

- You can leave any option (values remain unchanged) by pressing ◀ PREV. / EXIT.

### Menu structure

✱ EFFECTS

Switches sound effects.
- VIRT SURR
  virtual surround: 0...100 %

✱ VOL BALANCE

Adjusts the relative volume balance between the connected speakers.
- TEST TONE
  Test tone: on/off
- VOL FRONT-L
  Volume front left speaker: –50...+50
- VOL FRONT-R
  Volume front right speaker: –50...+50
- VOL CENTER
  Volume center speaker: –50...+50
- VOL REAR-L
  Volume rear left speaker: –50...+50
- VOL REAR-R
  Volume rear right speaker: –50...+50
- VOL SUBWOOFER
  Volume subwoofer: –50...+50

*Note: When using the* 6 CHANNEL / DVD INPUT *the values below cannot be changed.*

✱ SPEAKR SETUP

Selects the used speakers.
- SUBW PRESENT
  Subwoofer present: yes/no
- CENTER SPEAKR
  Center speaker present: yes/no
- REAR SPEAKER
  Rear speakers present: yes/no

✱ SPEAKR SIZES

Chooses the speaker sizes of the used speakers, for optimal sound reproduction. LARGE indicates a speaker which can reproduce frequencies lower than 50 Hz. If SUBW PRESENT is set to NO, FRONT SIZE can only be set to LARGE. If FRONT SIZE is set to SMALL, CENTER SIZE can only be set to SMALL and consequently a subwoofer must be connected.
- FRONT SIZE
  Left and right front speakers: small/large
- CENTER SIZE
  Center speaker: small/large
- REAR SIZE
  Rear speakers: small/large

✱ SPK DISTANCE

Distance between the usual listening position and the speakers. This defines the delay time for the surround sound.
- DISTANCE L/R
  Distance to front speakers: 1...10 m
- DISTANCE CNTR
  Distance to center speaker: 1...10 m
- DISTANCE REAR
  Distance to rear speakers: 1...10 m

- * SELECT INPUT
  Assigns the audio input connectors to the different source selections chosen with SOURCE SELECTOR (see "SOURCE SELECTION" for details).
  - COAX 1
    Digital coaxial input 1, COAX 1 IN
  - COAX2
    Digital coaxial input 2, COAX 2 IN
  - OPT (FR 965 only)
    Digital optical input, OPTICAL IN
  - OPT 1 (FR 975 only)
    Digital optical input, OPTICAL 1 IN
  - OPT 2 (FR 975 only)
    Digital optical input, OPTICAL 2 IN
  - SAT IN
    Analogue audio input SAT IN
  - VCR IN
    Analogue audio input VCR IN
  - TV IN
    Analogue audio input TV IN
  - CDR IN
    Analogue audio input CDR IN
  - CD IN
    Analogue audio input CD IN
  - 6 CH IN
    Analogue audio input 6 CHANNEL / DVD INPUT
- * TUNER
  Setup for preset radio stations (see "TUNER" for details).
  - AUTO INSTALL
    Stores radio stations automatically
  - MAN INSTALL
    Stores radio stations manually
  - GIVE NAME
    Allows to assign names to stored radio stations
  - RESHUFFLE
    Resorts stored radio stations

## TV menu

If the receiver is connected to a Philips CINEMA LINK TV via the CINEMA LINK system control bus sockets (see "CONNECTIONS"), you may use the TV to set up the system. An option called RECEIVER will be added to the TV menu.

If CINEMA LINK is on, adjustments on the receiver will be shown on the TV screen for a few seconds. Consult the instruction booklet of your TV on how to use the TV menu. The options offered may vary by TV model.

**Switching the connection**

- Press CINEMA LINK to switch the connection between the receiver and the TV either on or off.
  → If the connection is switched on, **CINEMA LINK ON** is displayed.

*Note: We recommend switching* CINEMA LINK *off during recording. This avoids unwanted interruptions due to switching TV functions.*

If CINEMA LINK is switched on and the TV menu is active, TV MENU is displayed and the menu and sound functions on the receiver are locked.

### SOURCE SELECTOR

When selecting a source by turning SOURCE SELECTOR, the audio and video inputs with the corresponding name are activated. The incoming signal is reproduced by all audio and – if the source includes a video signal – video outputs of the receiver. It is possible to reassign a source selection to other than these standard inputs.

| **Source selected** | **Connectors used** |
|---|---|
| DVD | COAX 1 digital audio input and DVD IN video input |
| PHONO | PHONO IN audio input |
| TUNER | The tuner part of the receiver is used, all inputs are switched off. |
| CD | CD IN audio input |
| CDR/TAPE | CDR/TAPE IN audio input |
| TV | TV IN audio input and no video input |
| VCR | VCR IN audio input and VCR IN video input |
| SAT | SAT IN audio input and SAT IN video input |

### 6 CHANNEL / DVD INPUT selection

The 6 CHANNEL / DVD INPUT connectors can be assigned to any of the available sources (excluding TUNER and PHONO). The assignment can be done via the ✱ SELECT INPUT option in the menu. See below for more details.

### Reassigning a source selection

If a source is selected with SOURCE SELECTOR the standard audio input is used. To change this, the source selection must be reassigned to another audio input.

Example: Reassigning CD from the analogue CD IN audio input to the digital COAX 2 IN audio input.

**1** Choose ✱ SELECT INPUT from the menu and press NEXT ▶.

**2** Turn SOURCE SELECTOR to select the source which should be reassigned (e. g. CD).
→The name of the source is displayed and the light of the source flashes.

**3** Turn ⇕ MENU NAVIGATOR to select the input connectors which should be used (e. g. CD -> COAX2).

**4** Press ENTER / OK to confirm your selection.
→STORED is displayed briefly.

**5** This source selection is now using the chosen audio input (e. g. CD uses the COAX 2 IN input connectors, **COAX 2** lights when switching to CD).

### Using one source selection for two or more appliances

You may assign more than one source to a source selection. This can be useful when products are connected one after the other in a chain.

Example: A VCR is connected to the TV but only the TV is connected to the receiver. Both SOURCE SELECTOR settings, TV as well as VCR, have to use the TV input connectors.

**1** Choose ✱ SELECT INPUT from the menu and press NEXT ▶.

**2** Turn SOURCE SELECTOR to select the source which should be reassigned (e. g. VCR).
→The name of the source is displayed and the light of the source flashes.

**3** Turn ⇕ MENU NAVIGATOR to select the input connectors which should be used (e. g. VCR -> TV IN).

**4** Press ENTER / OK to confirm your selection.
→STORED is displayed briefly.

**5** This source selection is now using the chosen audio input (e. g. VCR uses the TV IN input connectors, VCR (TV IN) is displayed briefly when switching to VCR).

### About 6 CHANNEL / DVD INPUT

The 6 CHANNEL / DVD INPUT can be used to connect a device with a built-in multichannel decoder (e.g. Dolby Digital, DTS, etc.) and 6-channel output connector, i. e. a high end DVD player.

When using the 6 CHANNEL / DVD INPUT audio input, the receiver works as a multichannel amplifier. The source reproduces surround sound and sends it to the receiver divided into the necessary channels. Therefore the SURROUND ON/OFF, HALL and SURR. MODE button have no effect since the provided signal is already multichannel.

From a source which is connected to the 6 CHANNEL / DVD INPUT audio input cannot be recorded.

## Playing a source

**1** Press POWER / STANDBY to switch on the receiver.

**2** Turn SOURCE SELECTOR to select a source.
➜The name of the source is displayed.

- You can select the FRONT AV / GAME input by pressing FRONT AV (FR 975 only).

**3** Start playback of the source as usual.

## Adjusting the sound

- Turn VOLUME to adjust the volume.
  ➜VOLUME and the volume level between 0 and 50 is displayed.

**1** Press BASS or TREBLE.
➜BASS or TREBLE and the actual value are displayed briefly. Then TURN VOLUME KNOB TO CHANGE is scrolled.

**2** Turn VOLUME to adjust the bass or treble.
➜BASS or TREBLE and the actual value are displayed.

*Note: If* VOLUME *is not turned within 5 seconds or if any other control is used, the bass or treble adjustment is switched off.*

- If a subwoofer is connected, press SUBW. ON/OFF to increase the bass performance.

*Note: In case of digital surround sound, a subwoofer signal will only be available when supported by the source material.*

- Press LOUDNESS to switch loudness either on or off.
  ➜**LOUDNESS** is displayed if loudness is on.

## Recording from a source

If you wish to record from a source you must select it with SOURCE SELECTOR. The incoming signal is reproduced by all audio and – if the source includes a video signal – video outputs of the receiver. The sound settings do not affect the recording.

**1** Turn SOURCE SELECTOR (or press FRONT AV – FR 975 only) to select the source you want to record from.
➜The name of the source is displayed.

**2** Prepare the desired recording appliance. It must be connected to one of the outputs of the receiver.

**3** Start recording on the recording appliance.

**4** Start the playback of the source as usual.

*Notes:* – *The audio and video signal of* VCR IN *is not reproduced by* VCR OUT. *The same applies to the audio signal of* CDR/TAPE IN to CDR/TAPE OUT.
– *We recommend not to use the digital output* COAX OUT *of the receiver to record from an analogue source. Use the analogue output* CDR/TAPE *instead.*
– *From a source which is connected to the* 6 CHANNEL / DVD INPUT *audio input cannot be recorded.*

## Recording from the digital output

It is possible to connect a digital recorder to the digital output of the receiver. In this way, all signals coming from the digital inputs can be recorded directly on the connected audio recorder. The receiver will also convert all signals coming from the analogue inputs to the digital output.

The receiver can be used to record digitally a multichannel surround sound audio signal (Dolby Digital, DTS or MPEG) from, for example, DVD to CD-R. The receiver will convert the digital multichannel signal into a stereo signal without loss of relevant sound information.

*Notes: – When recording a Dolby Digital, DTS or MPEG signal, each track must be recorded individually.*
*– Digital recording is not possible when the digital source material is copy-protected.*

## About surround sound

Surround sound gives you a complete new listening sensation. You will have the feeling of being in the middle of the action, because sound is coming from everywhere around you. Look out for TV broadcasts, audio and video tapes and discs with the DOLBY SURROUND, DOLBY DIGITAL, dts or MPEG Multichannel marks which are encoded for multichannel surround sound. You should prefer Dolby Digital, DTS or MPEG Multichannel to get the best out of your receiver.

The FR 965 and FR 975 are able to reproduce DTS surround sound. DTS is a premium multichannel surround sound system available on DVD discs, laserdiscs and audio discs. Consult your software dealer on the availability of DTS software in your region.

Notice that DVD discs do not always carry full multichannel surround. To be sure that a disc is multichannel encoded consult your dealer.

Most ordinary stereo tapes and discs can be replayed using surround sound settings with good results. If the reproduction is distorted in surround mode, switch to normal stereo mode.

The availabilty of the various surround sound modes described depends on the number of speakers used and the incoming sound information.

## Switching surround sound

With surround sound on, you can switch through the different surround modes. Note that the possibilities are related to speaker setup defined in the receivers menu.

If a digital surround signal is detected, the receiver will scroll either DOLBY DIGITAL, DTS or MPEG.

**1** Press SURROUND ON/OFF to switch on the surround sound.
→The surround mode in use is scrolled.

**2** Press SURR. MODE repeatedly to listen to the different surround modes (if available).
→The chosen mode and the speakers used are displayed. If the incoming multichannel signals are reduced to fewer output signals, **DOWNMIX** is displayed.

**3** Press VIRTUAL MODE as often as necessary to switch through the virtual surround sound modes:
1 × to activate 3D SURRUOND
2 × to activate MULTI FRONT
3 × to activate MULTI REAR
4 × to activate NATURAL SURROUND
→A light indicates if a virtual surround sound mode is on. 🔊-signs indicate which virtual surround sound mode is active.

**4** Press SURROUND ON/OFF to switch off the surround sound.
→SURROUND OFF is scrolled.

## Surround sound settings

HALL
The sound reproduction is enhanced and a slight echo is added. This gives the impression of being in a large room. Can only be used in stereo mode.

SURROUND
The surround mode enables normal surround sound reproduction with 4 or 5 speakers. Depending on the source material, Dolby Surround Pro Logic, Dolby Digital, DTS or MPEG is reproduced.

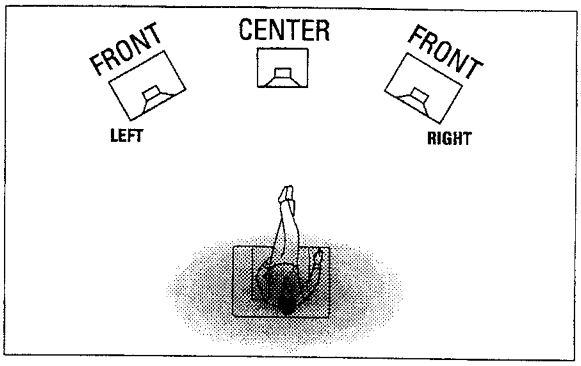
PRO LOGIC, DOLBY DIGITAL, DTS, MPEG
In addition to SURROUND, the surround mode used – depending on the source material – will be displayed. In case of digital surround, the sound format AC-3 (for Dolby Digital), DTS or MPEG (for MPEG 2 Multichannel) will be displayed, followed by the sound channels, available on the source (e. g. DVD).

| | | |
|---|---|---|
| Example: | AC-3 3/2.1 | Dolby Digital, 3 front channels, 2 surround channels and a subwoofer channel. |
| | MPEG 2/0.0 | MPEG Multichannel, stereo sound only. |
| | AC-3 3/1.0 | Dolby Digital, 3 front channels, 1 (mono) surround channel without subwoofer signal. |
| | DTS 3/2.1 | DTS, 3 front channels, 2 surround channels and a subwoofer channel. |

FRONT-3 STEREO
The surround sound is muted. 3 Stereo lets you listen to surround sound without using the surround speakers.

STEREO
All sound is reproduced and played through the front left and right speakers. This enables standard stereo reproduction.

**Virtual Surround**
Your receiver is able to reproduce one or more forms of virtual surround sound. Virtual surround gives a more real life sound impression by creating phantom speakers in addition to or instead of real speakers. The position of the listener influences the surround effect. The area where the effect is best is shown in grey.



The level of virtual surround sound effect can be adjusted in the setup menu. The following surround sound modes are available:

3D SURROUND
No rear speakers are needed. The sound of the rear channel is simulated by the front speakers. Surround sound is simulated through the front left, right and center speakers.

MULTI FRONT
Phantom speakers are created next to the left and right front speaker.

MULTI REAR
Phantom speakers are created next to the left and right rear speaker.

NATURAL SURROUND
Phantom speakers are created next to the left and right front and rear speakers.

*Note: The availability of* MULTI FRONT *and* MULTI REAR *depends on the sound channels on the source material.*

**NIGHT MODE** (only on the remote control)
The loud parts of the sound are lowered and the soft passages are raised. You can enjoy surround sound without disturbing sleeping children or neighbours. Night mode only works with Dolby Digital and MPEG, and only if supported by the source material.

## Tuning to radio stations

You can search for radio stations by scanning the frequency band. You can also key in the frequency of a known radio station. If an FM station is being broadcast and received in stereo, **STEREO** is shown.

**Searching for radio stations**

**1** Turn SOURCE SELECTOR to select the tuner.
→TUNER is displayed.

**2** Select a waveband by pressing TUNER AM/FM repeatedly.
→The selected waveband is displayed.

**3** Keep ◀ or ▶ pressed for approximately 1 second.
→SEARCH is displayed and the tuner tunes to a station with sufficient strength.

**4** Repeat this procedure until you find the desired station.

- To fine tune to a weak transmitter, briefly press ◀ or ▶ as often as necessary for optimum reception.

**Tuning to a radio station by frequency (with the remote control only)**

**1** Press TUNER.
→TUNER is displayed.

**2** Press FR. D..
→_ is displayed.

**3** Use 1–0 to key in the frequency of a radio station.

*Note: Only valid numbers within the frequency range of the tuner can be keyed in.*

## Switching FM sensitivity

You can switch the tuner to a lower search sensitivity, to search only for stations with a strong signal (FM only).

**1** Turn SOURCE SELECTOR to select the tuner.
→TUNER is displayed.

**2** Press SENS. on the receiver.
→Either **SENS HI** or **SENS LO** is displayed for 5 seconds.

*Note: While searching for radio stations, the actual sensitivity is displayed. In this case,* **SENS LO** *means the tuner is only looking for radio stations with a strong signal.*

## Storing radio stations

You may store up to 30 radio stations in the memory. The receiver can select and program radio stations by itself or you can choose them yourself.

**Automatic programming**

**1** Choose * TUNER from the menu and press NEXT ▶.

**2** Choose AUTO INSTALL and press NEXT ▶.
→The preset number where programming will start, the waveband and AUTO are displayed.

**3** Turn TUNER PRESET ⬍ to change the preset number where programming should start.

**4** Use TUNER AM/FM to switch to the desired waveband.

**5** Press ENTER / OK to start programming.
→AUTO INSTALL flashes and all available radio stations are programmed, this may take a few minutes. Programming is done when AUTO INSTALL stops flashing.

**Manual programming**

**1** Choose * TUNER from the menu and press NEXT ▶.

**2** Choose MAN INSTALL and press NEXT ▶.
→A preset number, the waveband and the frequency are displayed.

**3** Turn TUNER PRESET ⬍ to change to the preset number where the radio station should be stored.

**4** Tune to the desired radio station (see "Searching for radio stations").

**5** Press ENTER / OK to confirm your selection.
→STORED is displayed briefly. The radio station is programmed at the chosen preset number.

**6** Select and store all desired radio stations this way.

## Tuning to stored radio stations

**1** Turn SOURCE SELECTOR to TUNER to select the tuner.
→TUNER is displayed.

**2** Turn TUNER PRESET ▲▼ to select a preset radio station.
→**PRESET**, the preset number and station are displayed.

## Resorting stored radio stations

After programming radio stations, you might want to change their sequence. RESHUFFLE allows you to exchange the positions of presets.

**1** Choose * TUNER from the menu and press NEXT ▶.

**2** Choose RESHUFFLE and press NEXT ▶.
→**PRESET**, a preset number and station are displayed.

**3** Turn TUNER PRESET ▲▼ to select a preset station.

**4** Press ENTER / OK to confirm the selection.
→The selected preset number SWAP (-) and a second preset number are displayed.

**5** Turn TUNER PRESET ▲▼ to select the other preset station.

**6** Press ENTER / OK to confirm the exchange.
→RESHUFFLED is displayed briefly and these two preset numbers are swapped.

## Naming radio stations

It is possible to assign a name to any of the preset radio stations. RDS station names also can be overwritten.

**1** Choose * TUNER from the menu and press NEXT ▶.

**2** Choose GIVE NAME and press NEXT ▶.
→A preset radio station is displayed.

**3** Turn TUNER PRESET ▲▼ to select the preset to be renamed.

**4** Press ENTER / OK to confirm your selection.
→The existing name or -------- is displayed.

**5** Turn TUNER PRESET ▲▼ to select a letter and NEXT ▶ or ◀ PREV. to move to the next or previous position.

**6** After you have entered the entire name, press ENTER / OK to confirm.
→STORED is displayed and the name is stored.

*Note: If you want to use the transmitted RDS station name again, simply clear the given name.*

## Clearing station names

**1** Use the menu option * TUNER, choose GIVE NAME.
→A preset radio station is displayed.

**2** Turn ▲▼ MENU NAVIGATOR to select the name to be cleared.

**3** Press ENTER / OK to confirm your selection.

**4** Press ◀ PREV. while the first letter is flashing.
→ CL is flashing to the left of the station name.

**5** Press ENTER / OK to clear the station name.
**Or, if you have changed your mind,**
press ◀ PREV. to leave the station name as it is.

## RDS RDS

**R**adio **D**ata **S**ystem is a service that allows FM stations to send additional information. If you are receiving an RDS station, RDS and the station name are displayed.

**Switching through different RDS information**

- Press RADIO TEXT on the receiver repeatedly to switch through the following information (if available):
  - Radio text messages
  - RDS clock
  - Frequency
  - Station name

*Note: The time signal broadcasted from certain RDS stations may not always be accurate.*

## RDS News and Traffic Announcement

It is possible to set up the tuner in such a way that any playback is interrupted by news or traffic information of a chosen RDS station. Announcement functions only work if the necessary RDS signals are being broadcast.

If RDS stations are also carrying an EON signal (**E**nhanced **O**ther **N**etworks), **EON** is displayed. This signal enables the tuner to search not only the chosen RDS station, but the whole EON station network for news and traffic information.

**1** Tune to the desired RDS station.

**2** Press NEWS/TA:
**Once** to display **NEWS**, this switches on the news announcement function.
**Twice** to display **TA**, this switches on the traffic announcement function.
**Three times** to display **TA** and **NEWS**, this switches on both announcement functions.

**3** Select and play any other source as usual.
→ While news or traffic information is being broadcast the receiver will switch to tuner and **NEWS** or **TA** will flash.

**4** Press NEWS/TA until the display indication disappears to switch off the function(s).
**or**
Press NEWS/TA during an announcement to switch off the function(s).

*Note: Be sure to switch the news and traffic announcement off during recording, otherwise these announcements also will be recorded.*

## ADDENDUM

### Remote Control / Remote Control Buttons

*The following should be read instead of the original text*

🔇 MUTE ....................Mutes the sound of the receiver in all modes, except TV.
Mutes the sound of your Philips TV set if your remote control is in TV mode.

⏻ ................................Switches the source selected on your remote control (e.g. VCR, TV) to standby.
When pressed longer than 2 seconds, the receiver switches to standby.

### Connections / Analog Audio Connections

*Please read the following text as additional to the text*

DTS Digital Surround™ is a discrete 5.1-channel digital audio format available on CD, LD, and DVD software which consequently cannot be decoded and played back inside most CD, LD, or DVD players. For this reason, when DTS-encoded software is played back through the analog outputs of the CD, LD, or DVD player, excessive noise will be exhibited. To avoid possible damage to the audio system, proper precautions should be taken by the customer if the analog outputs are connected directly to the receiver.

To enjoy DTS Digital Surround™ playback, a DTS-compatible player has to be connected to one of the digital inputs of the receiver.

### System Setup

*Please read the following new chapter after the "Positioning the Speakers" chapter in this section:*

**Receiver Adjustment**

Once the number and position of loudspeakers has been fixed, you can adjust the initial receiver settings for optimal surround sound with the actual setup:

1 Set what speakers have been connected to the receiver *(see "Menus / Speaker Setup')*
Note: The initial setting of your receiver is:
two front speakers left and right: present (cannot be altered)
center speaker: present
two rear speakers: present
subwoofer: present

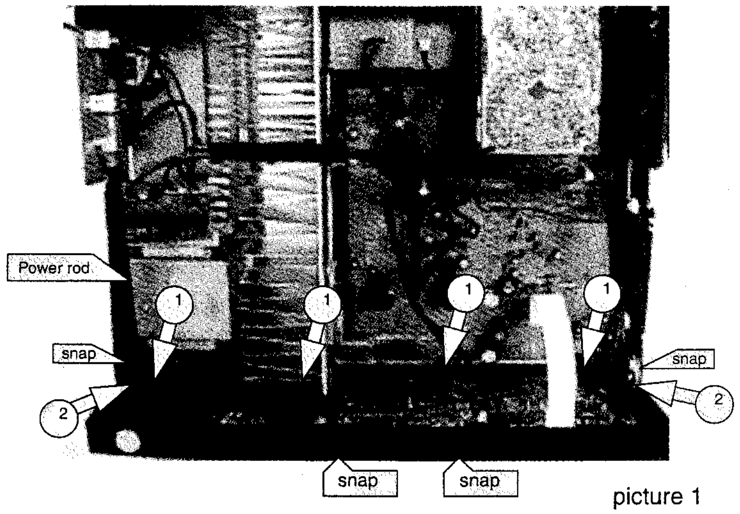
2 Select the size of the speakers (SMALL or LARGE) *(see "Menus: Speaker Sizes"* )
Select SMALL if your speaker is able to reproduce low notes down to at least 80–100 Hz.
Select LARGE if your speaker is able to reproduce low notes down to at least 50 Hz.
(As a rule of thumb, a LARGE speaker has a cone diameter of at least 12 cms (5 inches).)
See the specification sheets of your loudspeakers.
Note: The initial setting of your receiver is: all speakers set to LARGE.

3 Set the distance from the speakers to the listener's position *(see "Menus: Speaker Distance"* )
Note: The initial setting of your receiver is: all speakers set at a distance of 3 meters.

*General note:* Use the initial settings if you prefer that your receiver does not correct automatically for speaker sizes and distances.

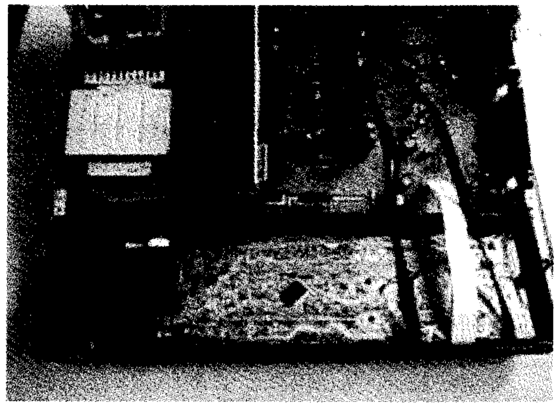
# DISMANTLING HINTS

## Dismantling of Front



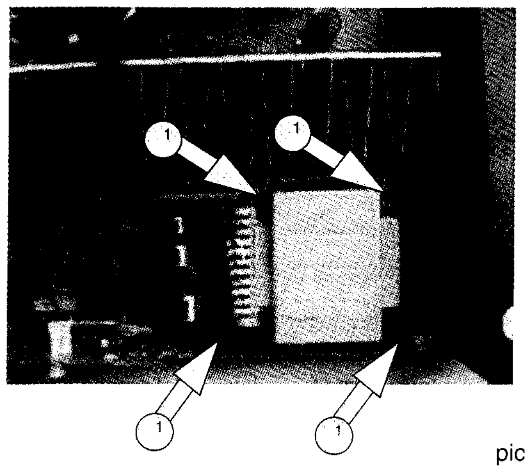
picture 1

1) Remove top cover
2) Remove power rod
3) Remove 6 x screw as shown in picture 1
4) Release two snaps (left & right side front)
5) Release two snaps on the bottom side front
6) Tipp down front as shown in picture 2



picture 2

## Dismantling of mainstrafo

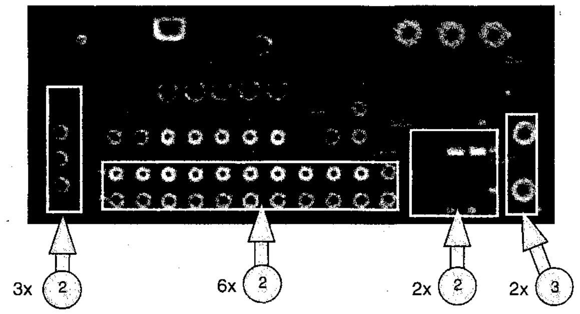


picture 8

1) Remove power rod
2) Remove 4x screw as shown in picture 8

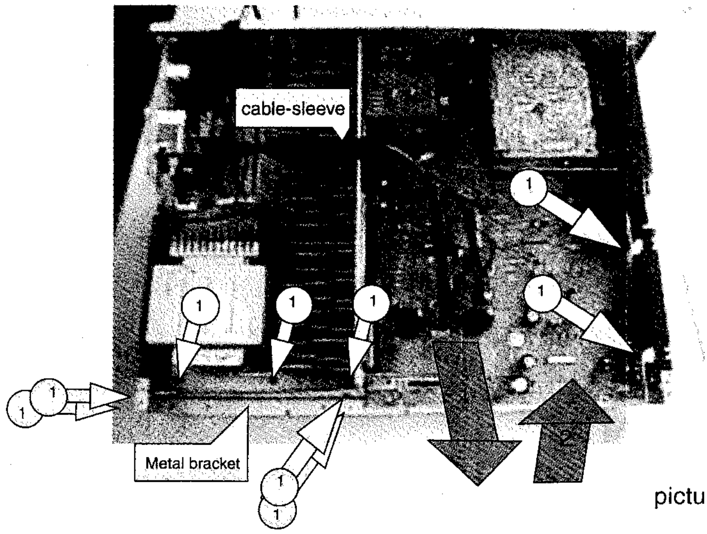
## Dismantling of mono board

1) Remove front . See picture 1
2) Remove whole front (disconnect the wires on the mono board coming from front)



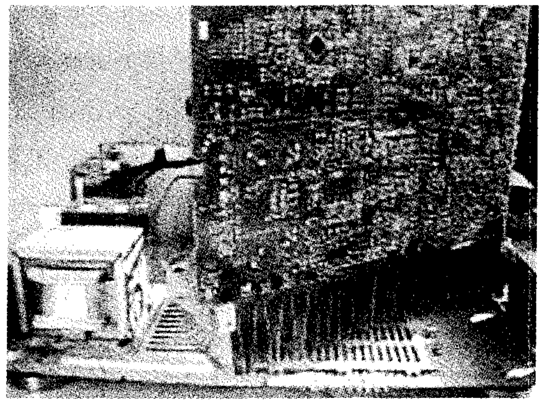
picture 3

3) Remove 13 x screws shown in mentionned aria . See picture 3



picture 4

4) Remove wires out the cable-sleeve.
5) Remove 7 x screw and remove metal bracket
6) Remove 2 x screw on mono board . See pictue 4
7) Remove mono board as shown arrow 1 & 2 . See picture 4
8) Bring the mono board in the service position as shown in picture 5



picture 5

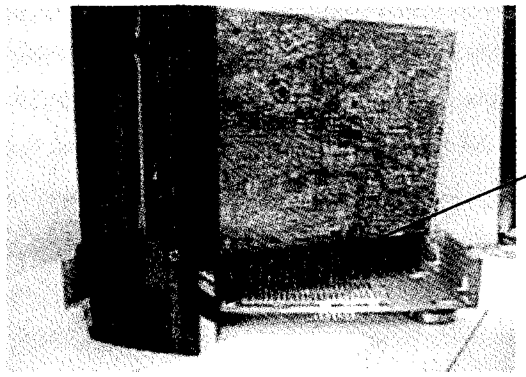
Legend

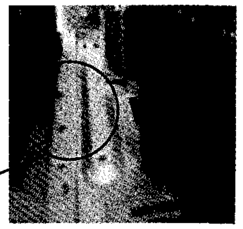
① = Torx M3x6mm ( screw with big head )

② = Torx 3x10mm ③ = Torx M3x6mm

## Service position monoboard

1) Bring front in position as shown in picture 6
2) Snap nok of front in bottom to make front stable . See picture 7
3) Connect front wiring back to monoboard.
*The tuner module doesn't have to be connected. Use an other source (pe.CD)

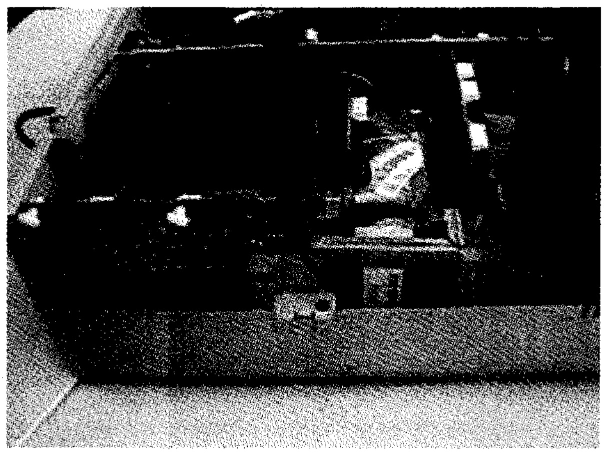




picture 7

picture 6

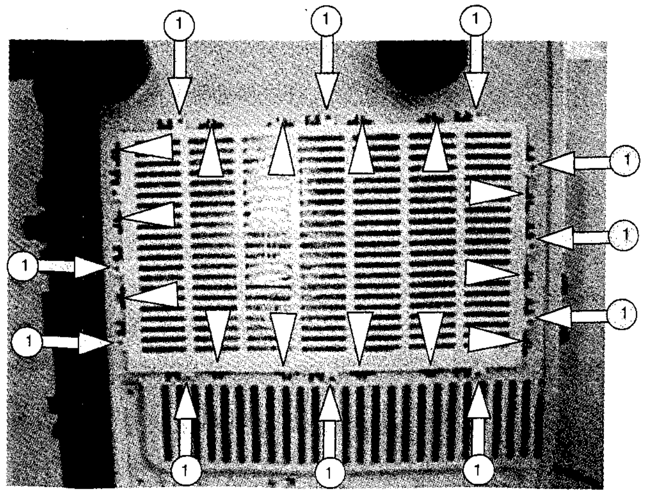
## Service position main trafo



picture 9

1) Put main trafo as shown in picture 9

## Handling service cover



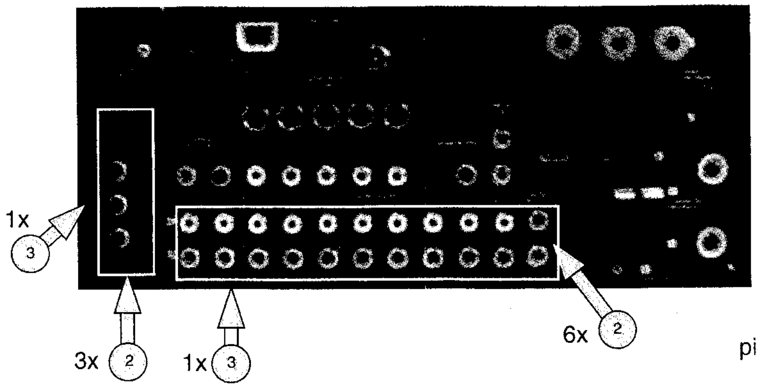
picture 10

1) To open the service cover cut 14 x lugs between cover and bottem . See picture 10 ( ▽ )
2) To close the service cover put 11 x screw in mentionned holes. See picture 10
Service codenumber 12x Torx M3x6mm screw with big head = 4822 502 11659

## DISMANTLING HINTS

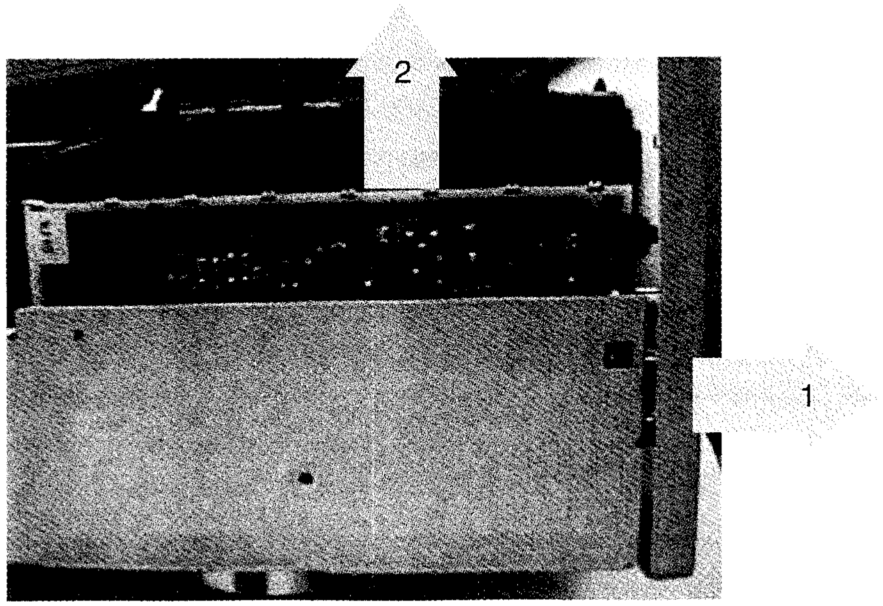
### Dismantling of MDM module

1) Remove all the screws mentionned in the arial . See picture 11


1x
③
3x ②
1x ③
6x ②

picture11

2) Remove backplate a little backwards. See arrow 1 (picture 12)
3) Pull module out the set as shown in picture 12



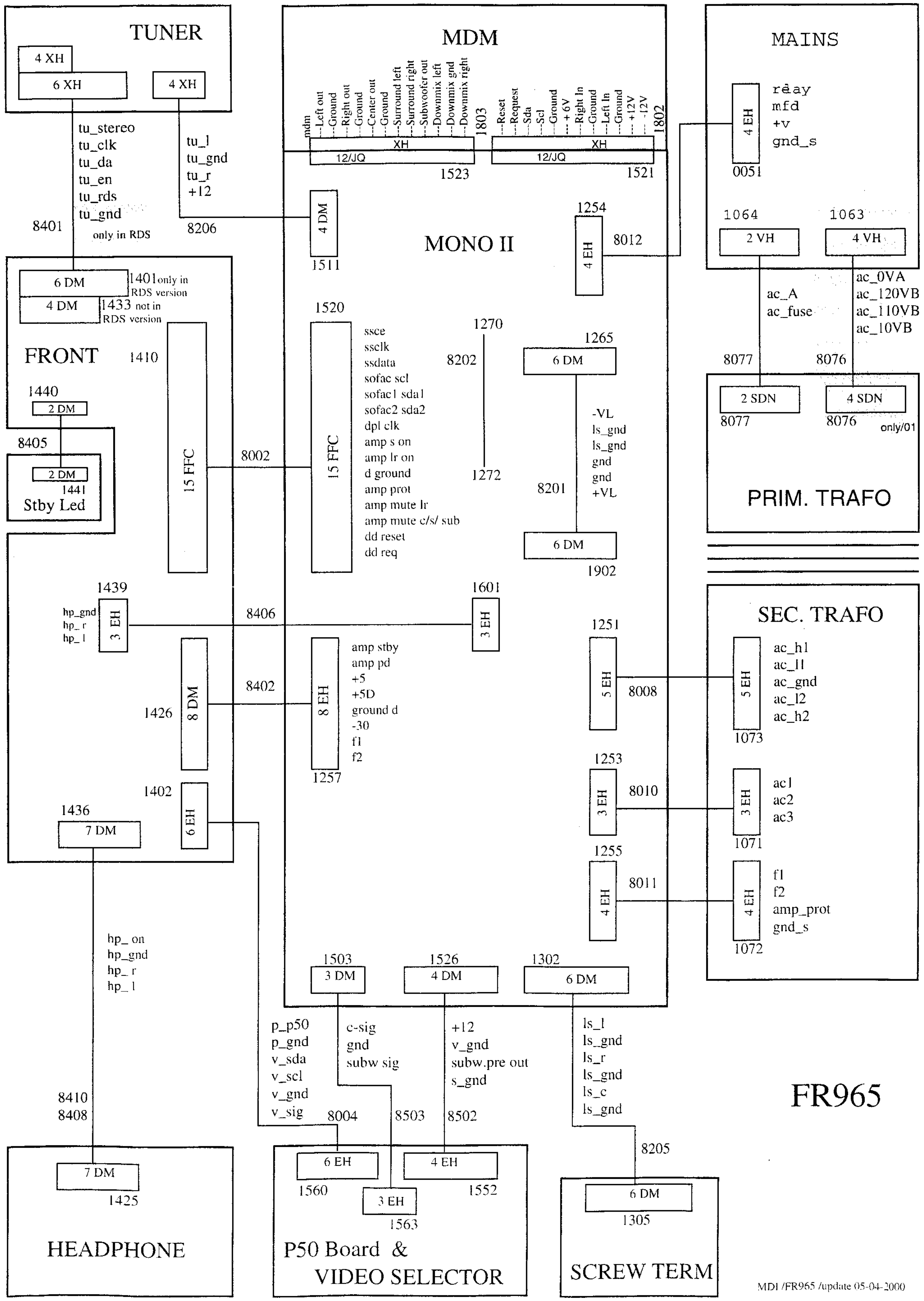
picture12

Legend

① = Torx M3x6mm ( screw with big head )

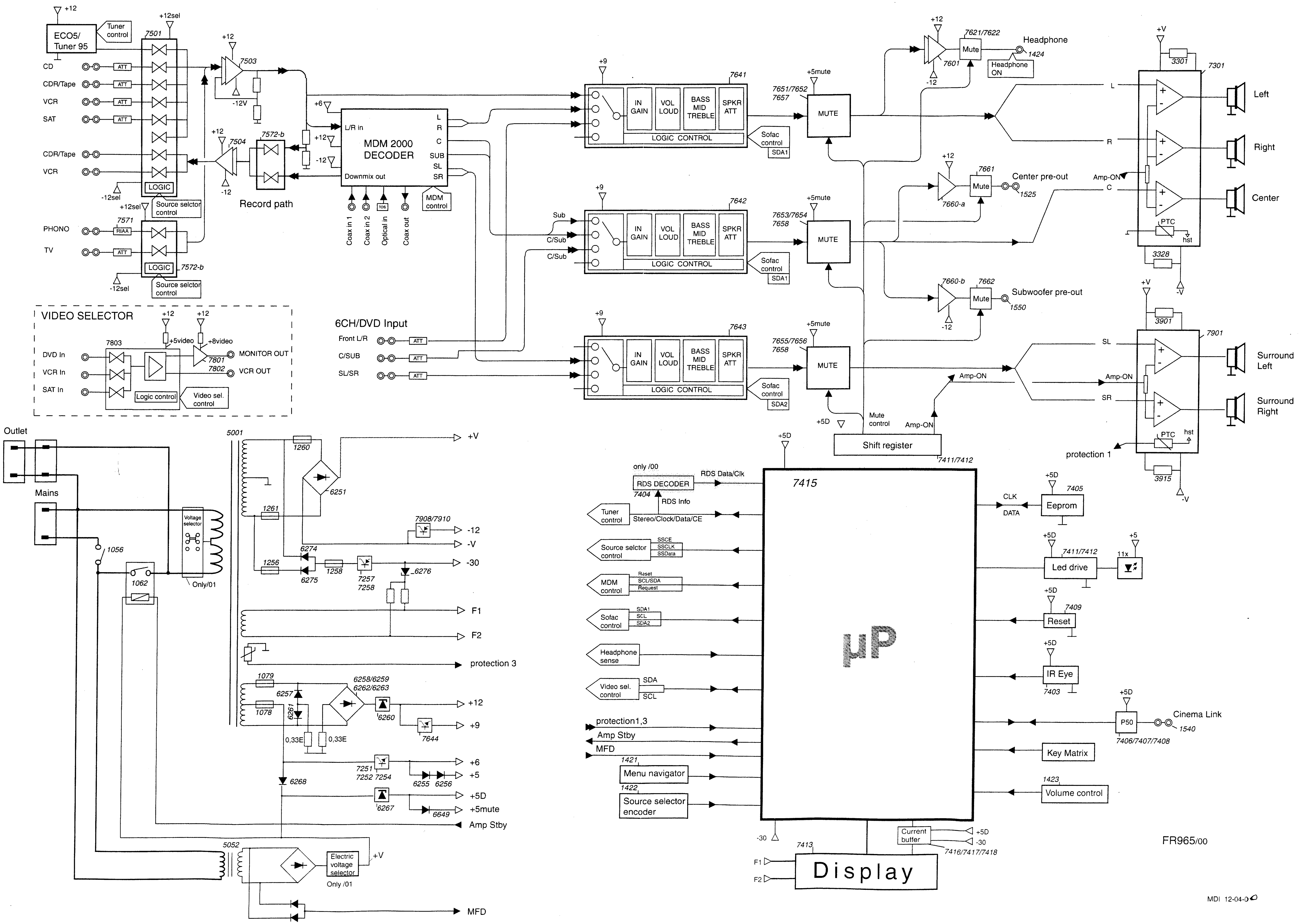
② = Torx 3x10mm ③ = Torx M3x6mm

## WIRING DIAGRAM


TUNER
4 XH
6 XH
4 XH
tu_stereo
tu_clk
tu_da
tu_en
tu_rds
tu_gnd
only in RDS
tu_l
tu_gnd
tu_r
+12
8401
8206
MDM
mdm
Left out
Ground
Right out
Ground
Center out
Ground
Surround left
Surround right
Subwoofer out
Downmix left
Downmix gnd
Downmix right
1803
Reset
Request
Sda
Scl
Ground
+ 6V
Right In
Ground
Left In
Ground
+12V
-12V
1802
XH
12/JQ
1523
XH
12/JQ
1521
MAINS
reay
mfd
+v
gnd_s
4 EH
0051
MONO II
4 DM
1511
1254
4 EH
8012
1064
1063
2 VH
4 VH
ac_A
ac_fuse
ac_0VA
ac_120VB
ac_110VB
ac_10VB
8077
8076
2 SDN
4 SDN
8077
8076
only/01
PRIM. TRAFO
6 DM
1401 only in RDS version
4 DM
1433 not in RDS version
FRONT
1410
1440
2 DM
8405
2 DM
1441
Stby Led
15 FFC
8002
1520
15 FFC
ssce
ssclk
ssdata
sofac scl
sofac1 sda1
sofac2 sda2
dpl clk
amp s on
amp lr on
d ground
amp prot
amp mute lr
amp mute c/s/ sub
dd reset
dd req
1270
8202
1272
1265
6 DM
-VL
ls_gnd
ls_gnd
gnd
gnd
+VL
8201
6 DM
1902
1439
hp_gnd
hp_r
hp_l
3 EH
8406
1601
3 EH
SEC. TRAFO
1251
5 EH
8008
5 EH
ac_h1
ac_l1
ac_gnd
ac_l2
ac_h2
1073
1426
8 DM
8402
8 EH
amp stby
amp pd
+5
+5D
ground d
-30
f1
f2
1257
1253
3 EH
8010
3 EH
ac1
ac2
ac3
1071
1402
6 EH
1436
7 DM
1255
4 EH
8011
4 EH
f1
f2
amp_prot
gnd_s
1072
hp_on
hp_gnd
hp_r
hp_l
1503
3 DM
1526
4 DM
1302
6 DM
p_p50
p_gnd
v_sda
v_scl
v_gnd
v_sig
c-sig
gnd
subw sig
+12
v_gnd
subw.pre out
s_gnd
ls_l
ls_gnd
ls_r
ls_gnd
ls_c
ls_gnd
FR965
8410
8408
8004
8503
8502
8205
7 DM
1425
HEADPHONE
6 EH
1560
3 EH
1563
4 EH
1552
P50 Board &
VIDEO SELECTOR
6 DM
1305
SCREW TERM

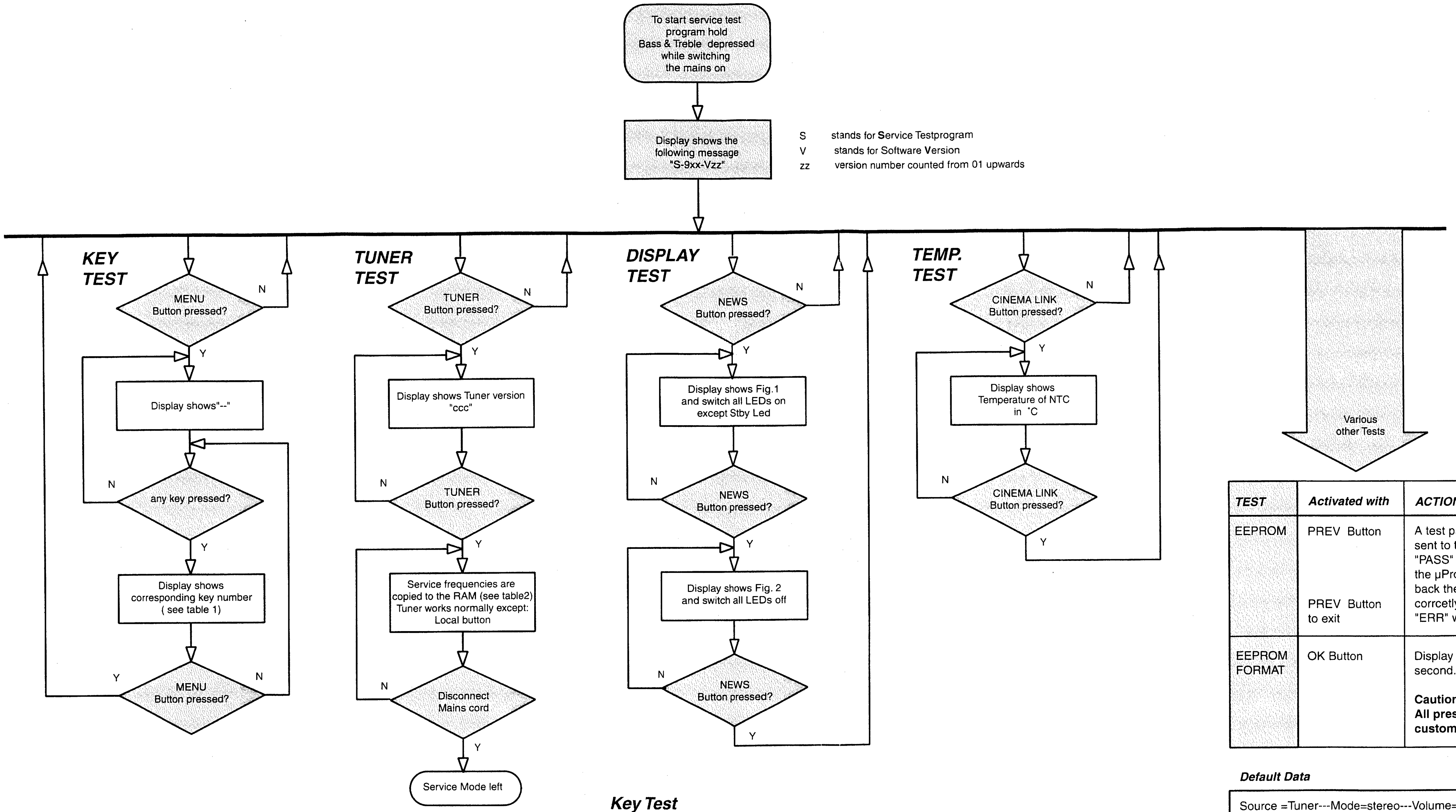
MDI /FR965 /update 05-04-2000

# BLOCKDIAGRAM


+12
ECO5/ Tuner 95
Tuner control
+12sel
7501
CD
CDR/Tape
VCR
SAT
CDR/Tape
VCR
ATT
LOGIC
-12sel
+12sel
Source selctor control
PHONO
TV
7571
RIAA
LOGIC
7572-b
Source selctor control
-12sel
+12
7503
-12V
+12
7504
7572-b
-12
Record path
+6
+12
-12
L/R in
MDM 2000 DECODER
Downmix out
L
R
C
SUB
SL
SR
MDM control
Coax in 1
Coax in 2
Optical in
Coax out
VIDEO SELECTOR
+12
+12
+5video
+8video
7803
7801
7802
DVD In
VCR In
SAT In
MONITOR OUT
VCR OUT
Logic control
Video sel. control
6CH/DVD Input
Front L/R
C/SUB
SL/SR
+9
7641
IN GAIN
VOL LOUD
BASS MID TREBLE
SPKR ATT
LOGIC CONTROL
Sofac control
SDA1
+9
7642
Sub
C/Sub
C/Sub
SDA1
+9
7643
SDA2
+5mute
7651/7652
7657
MUTE
+5mute
7653/7654
7658
+5mute
7655/7656
7658
+5D
Mute control
Amp-ON
Amp-ON
Shift register
7411/7412
+12
7601
-12
7621/7622
Mute
Headphone
1424
Headphone ON
+12
7661
7660-a
Center pre-out
1525
7660-b
7662
-12
Subwoofer pre-out
1550
+V
3301
7301
L
R
C
Amp-ON
PTC
hst
3328
-V
Left
Right
Center
+V
3901
7901
SL
Amp-ON
SR
PTC
hst
3915
-V
protection 1
Surround Left
Surround Right
Outlet
Mains
1056
Voltage selector
1062
Only/01
5001
1260
6251
+V
1261
7908/7910
-12
-V
6274
1256
1258
6275
7257
7258
6276
-30
F1
F2
protection 3
1079
6258/6259
6262/6263
6257
1078
6261
6260
+12
+9
7644
0,33E
0,33E
7251
7252 7254
6255 6256
+6
+5
6268
6267
6649
+5D
+5mute
Amp Stby
5052
Electric voltage selector
Only /01
+V
MFD
+5D
7415
µP
only /00
RDS DECODER
7404
RDS Data/Clk
RDS Info
Tuner control
Stereo/Clock/Data/CE
Source selctor control
SSCE
SSCLK
SSData
MDM control
Reset
SCL/SDA
Request
Sofac control
SDA1
SCL
SDA2
Headphone sense
Video sel. control
SDA
SCL
protection1,3
Amp Stby
MFD
1421
Menu navigator
1422
Source selector encoder
+5D
7405
CLK
DATA
Eeprom
+5D
7411/7412
Led drive
+5
11x
+5D
7409
Reset
+5D
IR Eye
7403
+5D
P50
Cinema Link
1540
7406/7407/7408
Key Matrix
1423
Volume control
-30
7413
Current buffer
+5D
-30
7416/7417/7418
F1
F2
Display

FR965/00

# SERVICE TEST PROGRAM


To start service test program hold Bass & Treble depressed while switching the mains on
Display shows the following message "S-9xx-Vzz"
S stands for Service Testprogram
V stands for Software Version
zz version number counted from 01 upwards
KEY TEST
MENU Button pressed?
N
Y
Display shows"--"
N
any key pressed?
Y
Display shows corresponding key number ( see table 1)
Y
MENU Button pressed?
N
TUNER TEST
TUNER Button pressed?
N
Y
Display shows Tuner version "ccc"
N
TUNER Button pressed?
Y
Service frequencies are copied to the RAM (see table2) Tuner works normally except: Local button
N
Disconnect Mains cord
Y
Service Mode left
DISPLAY TEST
NEWS Button pressed?
N
Y
Display shows Fig.1 and switch all LEDs on except Stby Led
N
NEWS Button pressed?
Y
Display shows Fig. 2 and switch all LEDs off
N
NEWS Button pressed?
Y
TEMP. TEST
CINEMA LINK Button pressed?
N
Y
Display shows Temperature of NTC in °C
N
CINEMA LINK Button pressed?
Y
Various other Tests

| TEST | Activated with | ACTION |
|---|---|---|
| EEPROM | PREV Button<br>PREV Button to exit | A test pattern will be sent to the Eeprom. "PASS" is displayed if the µProcessor read back the test pattern corrcetly, otherwise "ERR" will be displayed. |
| EEPROM FORMAT | OK Button | Display shows"NEW" for 1 second.<br>**Caution! All presets from the customer will be Lost** |

***Default Data***

Source =Tuner---Mode=stereo---Volume=10
Bass=0---Treble=0---Loudness=Off
#Effects: 3D Surr=100
#Volume balance:
Vol Front-L=0---Vol Front-R=0---Vol Center=0
Vol Rear-L=0---Vol Rear-R=0---Vol Subwoofer=0
#Speaker setup:
Subwoofer Present=Yes---Center=Yes---Rear=Yes
#Speaker Sizes:
Front Size=Large--- Center Size=Large---Rear Size=Large
#Speaker Distance:
Dist L/R=3meter---Dist Center=3meter---Dist Rear=3meter

## *Key Test*

| Key | Number | Key | Number | Key | Number |
|---|---|---|---|---|---|
| Cinema | 1 | Sens | 7 | Loudness | 13 |
| Surr. on/off | 2 | News T/A | 8 | Bass | 14 |
| Surr. Mode | 3 | Prev.Exit | 9 | Treble | 15 |
| Virt. Mode | 4 | Setup Menu | - - | | |
| Tuner | 5 | Next | 11 | | |
| Radio Text | 6 | Enter/OK | 12 | | |

Table 1

## *Tuner Test*

| Display info Version | Europe "EUR" /00 | East Eur. 3-band "EEL" /14 | East Eur. 2-band "EEU" /14 | USA "USA" /17 | Oversea "OSE" /01 |
|---|---|---|---|---|---|
| Preset 1 | 87.5MHz | 65.81MHz | 65.81MHz | 87.5MHz | 87.5MHz |
| 2 | 108MHz | 108MHz | 108MHz | 108MHz | 108MHz |
| 3 | 531kHz | 74MHz | 74MHz | 530kHz | 531kHz |
| 4 | 1602kHz | 87.5MHz | 87.5MHz | 1700kHz | 1602kHz |
| 5 | 558kHz | 531kHz | 531kHz | 560kHz | 558kHz |
| 6 | 1494kHz | 1602kHz | 1602kHz | 1500kHz | 1494kHz |
| 7 | 153kHz | 558kHz | 558kHz | 98MHz | ---- |
| 8 | 279kHz | 1494kHz | 1494kHz | ---- | ---- |
| 9 | 198kHz | 153kHz | 98MHz | ---- | ---- |
| 10 | 98MHz | 279kHz | 70.01MHz | ---- | ---- |
| 11 | ---- | 198kHz | ---- | ---- | 98MHz |

Table 2

This table is valid for all types of tuners.
Custormer presets will not changed after this Tuner test.
If a station is tuned then the display flag "OK" will be ON otherwise it will be OFF.
If the tuned frequency is carrying RDS information, the display flag "RDS" will be ON.
Oversea version: the tuning grid can be switched between 9kHz and 10kHz by pressing the key "TUNER" for longer then 2 seconds. "Grid 9" or "Grid10" will be shown accordingly.
Grid 9kHz is in FM 50kHz , Grid 10kHz is in FM 100kHz
Europe version: the LW can be switched On and Off by pressing the key "TUNER" for longer than 2 seconds. LW OFF or LW ON will be shown accordingly.

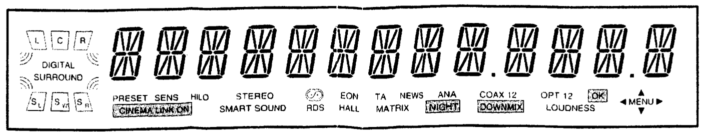

L
C
R
DIGITAL
SURROUND
SL
SW
SR
PRESET
SENS
HILO
CINEMA LINK ON
STEREO
SMART SOUND
RDS
EON
HALL
TA
NEWS
ANA
MATRIX
NIGHT
COAX 12
DOWNMIX
OPT 12
OK
LOUDNESS
MENU

Figure 1

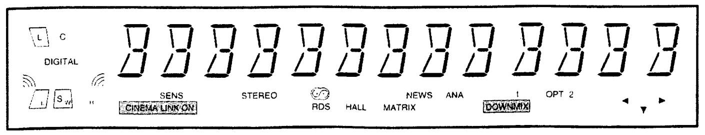
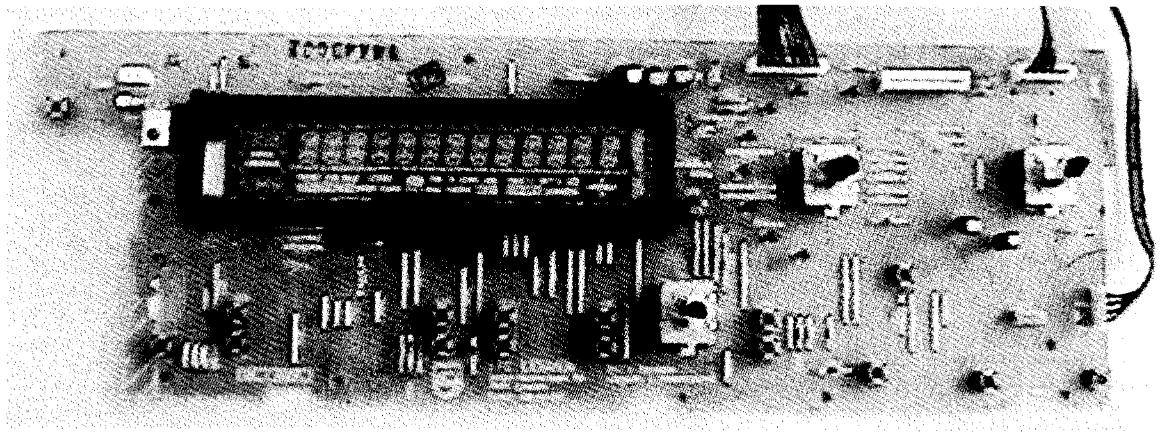

L
C
DIGITAL
SW
SENS
CINEMA LINK ON
STEREO
RDS
HALL
NEWS
ANA
MATRIX
1
DOWNMIX
OPT 2

Figure 2



# FRONT BOARD

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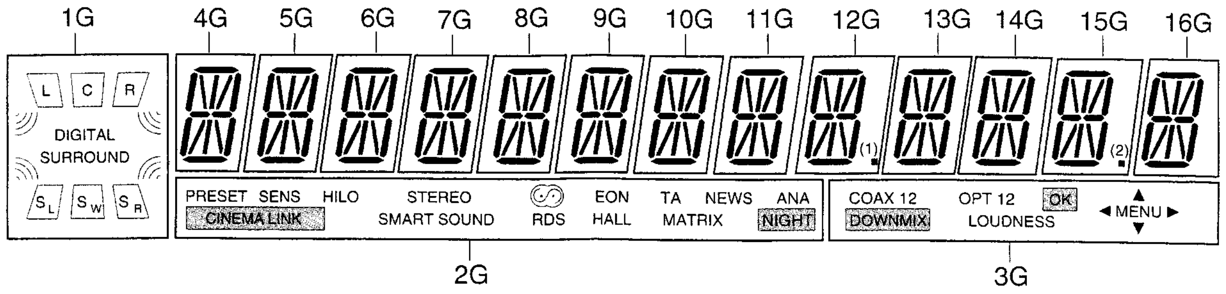
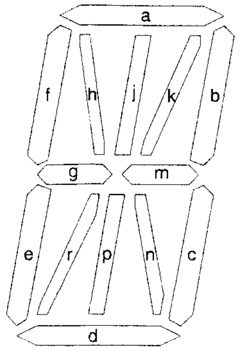
FTD Display pin connections .................................. 6-2
Headphone & Led board layout ............................ 6-3
Circuit diagram ........................................................ 6-4
Component layout ................................................... 6-5
Partslist .................................................................... 6-6

## FTD DISPLAY PIN CONNECTIONS


1G
4G
5G
6G
7G
8G
9G
10G
11G
12G
13G
14G
15G
16G
L
C
R
DIGITAL
SURROUND
S L
S W
S R
(1)
(2)
PRESET SENS HILO STEREO EON TA NEWS ANA
CINEMA LINK SMART SOUND RDS HALL MATRIX NIGHT
COAX 12 OPT 12 OK
DOWNMIX LOUDNESS
◄ MENU ►
2G
3G


a
f
h
j
k
b
g
m
e
r
p
n
c
d

| | 1G | 2G | 3G | 4G~11G | 12G | 13G ,14G | 15G | 16G |
|---|---|---|---|---|---|---|---|---|
| P1 | L | MATRIX | DOWNMIX | a | a | a | a | a |
| P2 | R | NIGHT | COAX | j p | j p | j p | j p | j p |
| P3 | C | ANA | 1(coax) | h | h | h | h | h |
| P4 | □ (C) | LO | 2(coax) | k | k | k | k | k |
| P5 | ▱ ($S_L$) | CINEMA LINK | OPT | b | b | b | b | b |
| P6 | ▱ ($S_R$) | EON | 1(opt) | f | f | f | f | f |
| P7 | $S_W$ | HALL | 2(opt) | m | m | m | m | m |
| P8 | S (L) | HI | LOUDNESS | g | g | g | g | g |
| P9 | L | NEWS | ▼ | c | c | c | c | c |
| P10 | S (R) | PRESET | MENU | e | e | e | e | e |
| P11 | R | RDS | ► | r | r | r | r | r |
| P12 | ))) ((( | SMART SOUND | OK | n | n | n | n | n |
| P13 | ))) ((( | STEREO | ◄ | d | d | d | d | d |
| P14 | SURROUND | TA | ▲ | - | ■ (1) | - | ■ (2) | - |
| P15 | DIGITAL | SENS | - | - | - | - | - | - |

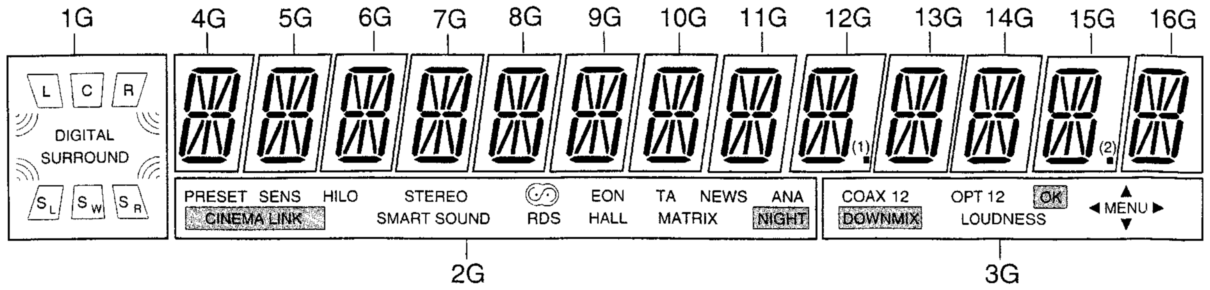
Pin Connection

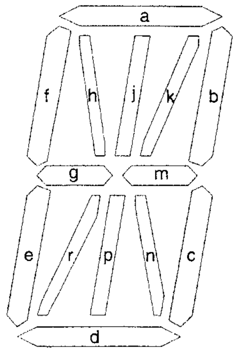
| Pin numbers | 50 | 49 | 48 | 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Connection | 1G | 2G | 3G | 4G | 5G | 6G | 7G | 8G | 9G | 10G | 11G | 12G | 13G | 14G | 15G | 16G | NC | NC | NC | NC | NC | NC | P15 | P14 | P13 | P12 | P11 | P10 | P9 | P8 | P7 | P6 | P5 | P4 | P3 | P2 | P1 | NC | NC | NC | NC | NC | NC | NC | NC | NC | NP | NP | F1 | F1 |

| Pin numbers | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Connection | F2 | F2 | NP | NP | NC | NC | NC | NC | NC | NC | NC | NC |

Note: FI , F2 --------- Filament
NC -------------- No connection
NP -------------- No pin
1G ~ 16G ----- Grid

## FTD DISPLAY PIN CONNECTIONS


1G
4G
5G
6G
7G
8G
9G
10G
11G
12G
13G
14G
15G
16G
L
C
R
DIGITAL
SURROUND
SL
SW
SR
(1)
(2)
PRESET SENS HILO
STEREO
EON
TA NEWS ANA
CINEMA LINK
SMART SOUND
RDS
HALL
MATRIX
NIGHT
COAX 12
OPT 12
OK
DOWNMIX
LOUDNESS
MENU
2G
3G


a
f
h
j
k
b
g
m
e
r
p
n
c
d

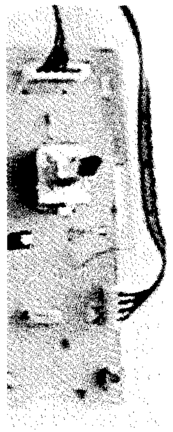
| | 1G | 2G | 3G | 4G~11G | 12G | 13G ,14G | 15G | 16G |
|---|---|---|---|---|---|---|---|---|
| P1 | L | MATRIX | DOWNMIX | a | a | a | a | a |
| P2 | R | NIGHT | COAX | j p | j p | j p | j p | j p |
| P3 | C | ANA | 1(coax) | h | h | h | h | h |
| P4 | (C) | LO | 2(coax) | k | k | k | k | k |
| P5 | ($S_L$) | CINEMA LINK | OPT | b | b | b | b | b |
| P6 | ($S_R$) | EON | 1(opt) | f | f | f | f | f |
| P7 | $S_W$ | HALL | 2(opt) | m | m | m | m | m |
| P8 | S (L) | HI | LOUDNESS | g | g | g | g | g |
| P9 | L | NEWS | ▼ | c | c | c | c | c |
| P10 | S (R) | PRESET | MENU | e | e | e | e | e |
| P11 | R | RDS | ▶ | r | r | r | r | r |
| P12 | | SMART SOUND | OK | n | n | n | n | n |
| P13 | | STEREO | ◀ | d | d | d | d | d |
| P14 | SURROUND | TA | ▲ | - | ■ (1) | - | ■ (2) | - |
| P15 | DIGITAL | SENS | - | - | - | - | - | - |

Pin Connection

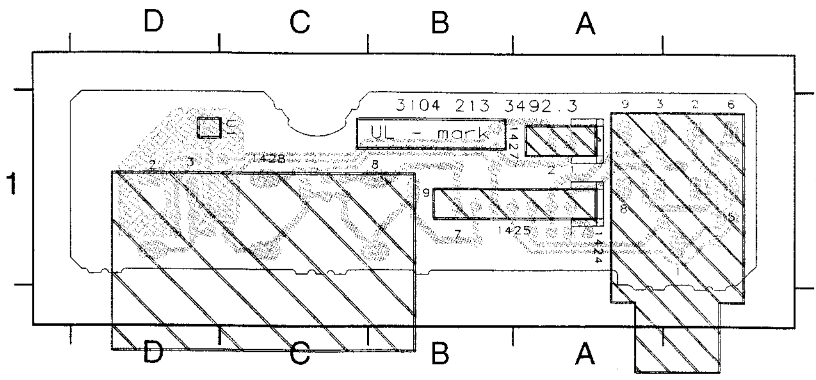
| Pin numbers | 50 | 49 | 48 | 47 | 46 | 45 | 44 | 43 | 42 | 41 | 40 | 39 | 38 | 37 | 36 | 35 | 34 | 33 | 32 | 31 | 30 | 29 | 28 | 27 | 26 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Connection | 1G | 2G | 3G | 4G | 5G | 6G | 7G | 8G | 9G | 10G | 11G | 12G | 13G | 14G | 15G | 16G | NC | NC | NC | NC | NC | NC | P15 | P14 | P13 | P12 | P11 | P10 | P9 | P8 | P7 | P6 | P5 | P4 | P3 | P2 | P1 | NC | NC | NC | NC | NC | NC | NC | NC | NC | NP | NP | F1 | F1 |

| Pin numbers | 62 | 61 | 60 | 59 | 58 | 57 | 56 | 55 | 54 | 53 | 52 | 51 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Connection | F2 | F2 | NP | NP | NC | NC | NC | NC | NC | NC | NC | NC |

Note: FI , F2 --------- Filament
NC -------------- No connection
NP -------------- No pin
1G ~ 16G ----- Grid

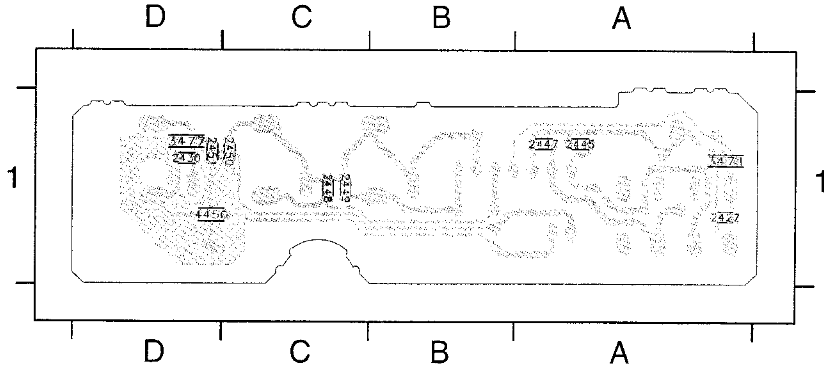


## HEADPHONE BOARD - COMPONENT VIEW


D
C
B
A
1
3104 213 3492.3
UL - mark
1428
1425
1424
1427

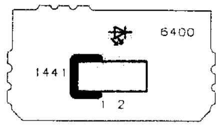
| | |
|---|---|
| U1 | C1 |
| 1424 | A1 |
| 1425 | A1 |
| 1427 | A1 |
| 1428 | C1 |

## HEADPHONE BOARD - COPPER SIDE VIEW

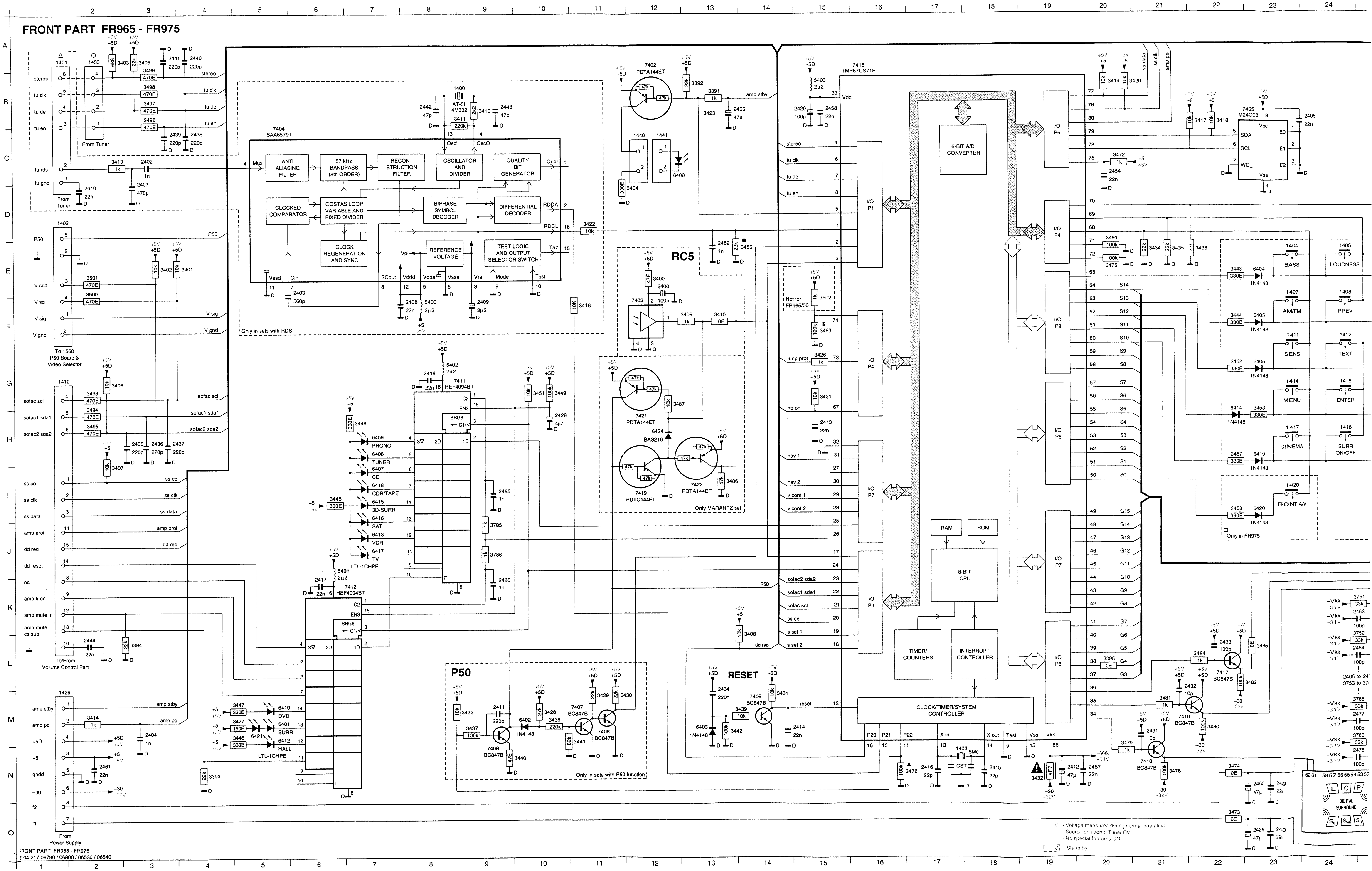


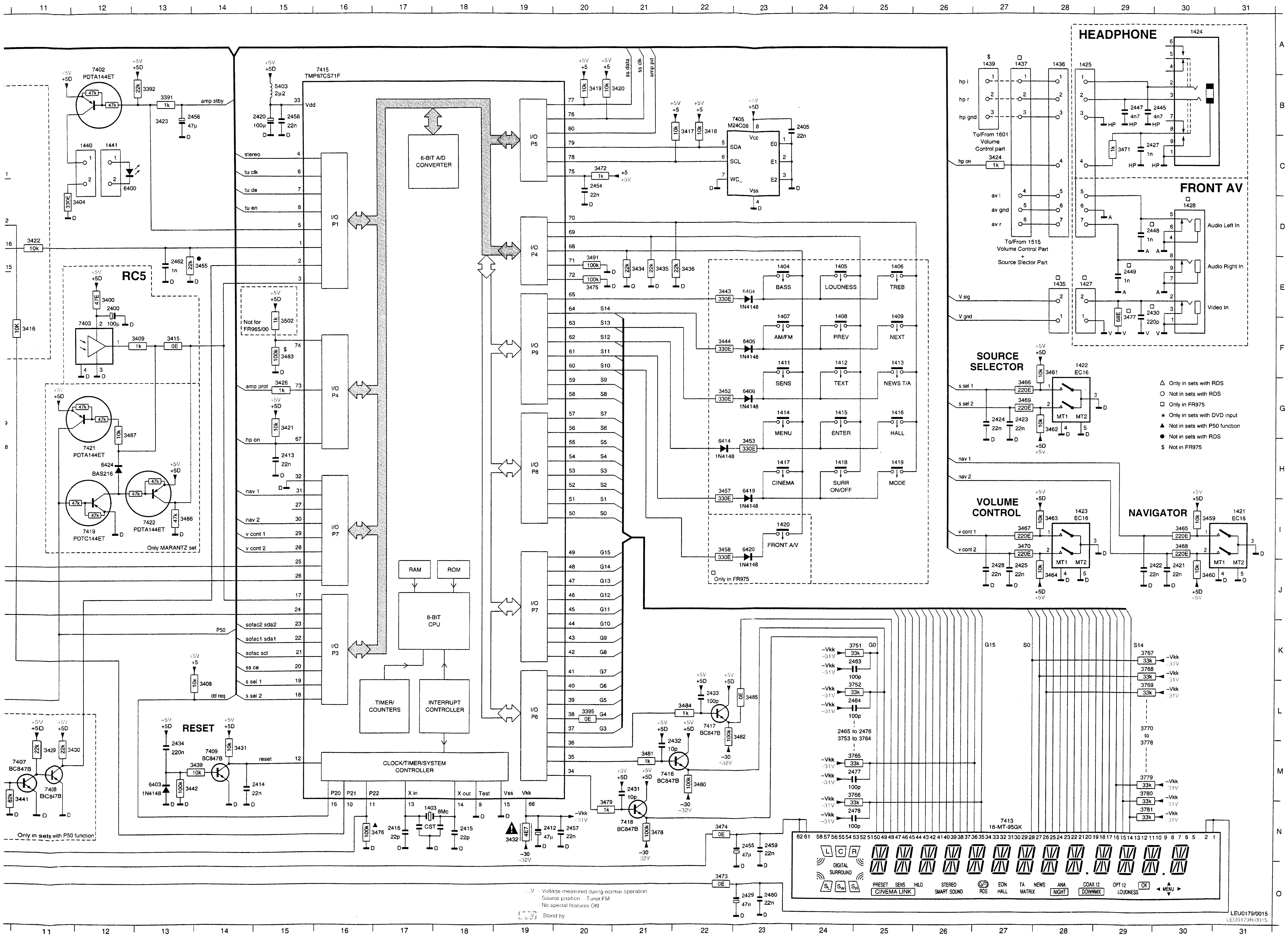
| | |
|---|---|
| 2427 | A1 |
| 2430 | D1 |
| 2445 | A1 |
| 2447 | A1 |
| 2448 | C1 |
| 2449 | C1 |
| 2450 | C1 |
| 2451 | D1 |
| 3471 | A1 |
| 3477 | D1 |
| 4450 | D1 |

## LED BOARD - COMPONENT VIEW


6400
1441
1 2

# FRONT PART FR965 - FR975


From Tuner
1401
1433
stereo
tu clk
tu de
tu en
tu rds
tu gnd
7404
SAA6579T
ANTI ALIASING FILTER
57 kHz BANDPASS (8th ORDER)
RECON-STRUCTION FILTER
OSCILLATOR AND DIVIDER
QUALITY BIT GENERATOR
CLOCKED COMPARATOR
COSTAS LOOP VARIABLE AND FIXED DIVIDER
BIPHASE SYMBOL DECODER
DIFFERENTIAL DECODER
CLOCK REGENERATION AND SYNC
REFERENCE VOLTAGE
TEST LOGIC AND OUTPUT SELECTOR SWITCH
Only in sets with RDS
1400
AT-51
4M332
1402
P50
V sda
V scl
V sig
V gnd
To 1560 P50 Board & Video Selector
1410
sofac scl
sofac1 sda1
sofac2 sda2
ss ce
ss clk
ss data
amp prot
dd req
dd reset
nc
amp lr on
amp mute lr
amp mute cs sub
To/From Volume Control Part
1426
amp stby
amp pd
+5D
+5
gndd
-30
f2
f1
From Power Supply
7402
PDTA144ET
1440
1441
6400
RC5
7403
Not for FR965/00
7421
PDTA144ET
6424
BAS216
7419
PDTC144ET
7422
PDTA144ET
Only MARANTZ set
7411
HEF4094BT
SRG8
7412
HEF4094BT
6409 PHONO
6408 TUNER
6407 CD
6418 CDR/TAPE
6415 3D-SURR
6416 SAT
6413 VCR
6417 TV
LTL-1CHPE
6410 DVD
6401 SURR
6412 HALL
P50
7406 BC847B
7407 BC847B
7408 BC847B
Only in sets with P50 function
RESET
7409 BC847B
6403 1N4148
7415
TMP87CS71F
I/O P1
I/O P4
I/O P7
I/O P3
I/O P5
I/O P4
I/O P9
I/O P8
I/O P7
I/O P6
6-BIT A/D CONVERTER
RAM
ROM
8-BIT CPU
TIMER/ COUNTERS
INTERRUPT CONTROLLER
CLOCK/TIMER/SYSTEM CONTROLLER
1403 8Mc CST
7405
M24C08
1404 BASS
1405 LOUDNESS
1407 AM/FM
1408 PREV
1411 SENS
1412 TEXT
1414 MENU
1415 ENTER
1417 CINEMA
1418 SURR ON/OFF
1420 FRONT A/V
Only in FR975
7416 BC847B
7417 BC847B
7418 BC847B
DIGITAL SURROUND
...V - Voltage measured during normal operation
- Source position : Tuner FM
- No special features ON
Stand by
FRONT PART FR965 - FR975
3104 217 06790 / 06800 / 06530 / 06540


HEADPHONE
FRONT AV
SOURCE SELECTOR
VOLUME CONTROL
NAVIGATOR
RC5
RESET
7415 TMP87CS71F
6-BIT A/D CONVERTER
8-BIT CPU
RAM
ROM
TIMER/ COUNTERS
INTERRUPT CONTROLLER
CLOCK/TIMER/SYSTEM CONTROLLER
7405 M24C08
7413 16-MT-95GK
BASS
LOUDNESS
TREB
AM/FM
PREV
NEXT
SENS
TEXT
NEWS T/A
MENU
ENTER
HALL
CINEMA
SURR ON/OFF
MODE
FRONT A/V
Not for FR965/00
Only in FR975
Only MARANTZ set
Only in sets with P50 function
To/From 1601 Volume Control part
To/From 1515 Volume Control Part + Source Slector Part
Audio Left In
Audio Right In
Video In
△ Only in sets with RDS
○ Not in sets with RDS
□ Only in FR975
★ Only in sets with DVD input
▲ Not in sets with P50 function
● Not in sets with RDS
$ Not in FR975
_V : Voltage measured during normal operation
- Source position : Tuner FM
- No special features ON
Stand by
LEU0179/0015
LEU0179R/0015

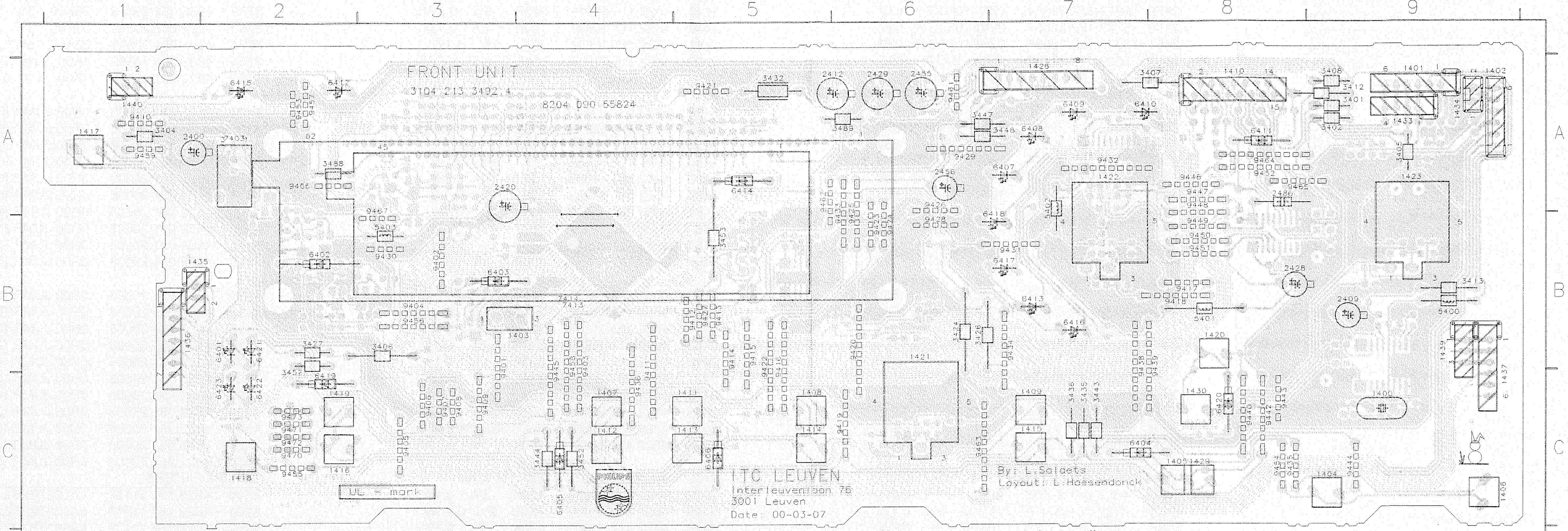
| | | | | | |
|---|---|---|---|---|---|
| 1400 | B8 | 3418 | B22 | 7404 | C5 |
| 1401 | A1 | 3419 | B20 | 7405 | B22 |
| 1402 | D1 | 3420 | B20 | 7406 | N9 |
| 1403 | N17 | 3421 | G15 | 7407 | M11 |
| 1404 | E23 | 3422 | D11 | 7408 | M11 |
| 1405 | E24 | 3423 | B13 | 7409 | M14 |
| 1406 | E25 | 3424 | C27 | 7411 | G8 |
| 1407 | F23 | 3426 | G15 | 7412 | K6 |
| 1408 | F24 | 3427 | M4 | 7413 | N27 |
| 1409 | F25 | 3428 | M10 | 7415 | A16 |
| 1410 | G1 | 3429 | M11 | 7416 | M21 |
| 1411 | F23 | 3430 | M11 | 7417 | L22 |
| 1412 | F24 | 3431 | M14 | 7418 | N21 |
| 1413 | F25 | 3432 | N19 | 7419 | I12 |
| 1414 | G23 | 3433 | M9 | 7421 | H12 |
| 1415 | G24 | 3434 | E21 | 7422 | I13 |
| 1416 | G25 | 3435 | E21 | | |
| 1417 | H23 | 3436 | E22 | | |
| 1418 | H24 | 3437 | M9 | | |
| 1419 | H25 | 3438 | M10 | | |
| 1420 | I23 | 3439 | M13 | | |
| 1421 | I31 | 3440 | N10 | | |
| 1422 | F28 | 3441 | N11 | | |
| 1423 | I28 | 3442 | M13 | | |
| 1424 | A30 | 3443 | E22 | | |
| 1425 | A28 | 3444 | F22 | | |
| 1426 | M1 | 3445 | I6 | | |
| 1427 | E28 | 3446 | M4 | | |
| 1428 | D30 | 3447 | M4 | | |
| 1433 | A2 | 3448 | H7 | | |
| 1435 | E28 | 3449 | G10 | | |
| 1436 | A28 | 3451 | G10 | | |
| 1437 | A27 | 3452 | G22 | | |
| 1439 | A27 | 3453 | H23 | | |
| 1440 | C12 | 3455 | E14 | | |
| 1441 | C12 | 3457 | H22 | | |
| 2400 | E12 | 3458 | I22 | | |
| 2402 | C3 | 3459 | I30 | | |
| 2403 | E6 | 3460 | J30 | | |
| 2404 | M3 | 3461 | F28 | | |
| 2405 | B24 | 3462 | G28 | | |
| 2407 | D3 | 3463 | I28 | | |
| 2408 | F8 | 3464 | J28 | | |
| 2409 | F9 | 3465 | I30 | | |
| 2410 | D2 | 3466 | G27 | | |
| 2411 | M9 | 3467 | I27 | | |
| 2412 | N19 | 3468 | I30 | | |
| 2413 | H15 | 3469 | G27 | | |
| 2414 | M14 | 3470 | I27 | | |
| 2415 | N18 | 3471 | C29 | | |
| 2416 | N17 | 3472 | C20 | | |
| 2417 | K6 | 3473 | O22 | | |
| 2419 | G8 | 3474 | N22 | | |
| 2420 | B15 | 3475 | E20 | | |
| 2421 | J30 | 3476 | N16 | | |
| 2422 | J29 | 3477 | F29 | | |
| 2423 | G27 | 3478 | N21 | | |
| 2424 | G27 | 3479 | N20 | | |
| 2425 | J27 | 3480 | M22 | | |
| 2426 | J27 | 3481 | M21 | | |
| 2427 | C29 | 3482 | L23 | | |
| 2428 | H10 | 3483 | F15 | | |
| 2429 | O23 | 3484 | L22 | | |
| 2430 | E29 | 3485 | L23 | | |
| 2431 | M21 | 3486 | I13 | | |
| 2432 | M21 | 3487 | G12 | | |
| 2433 | L22 | 3491 | E20 | | |
| 2434 | M13 | 3493 | G2 | | |
| 2435 | H3 | 3494 | H2 | | |
| 2436 | H3 | 3495 | H2 | | |
| 2437 | H3 | 3496 | B3 | | |
| 2438 | C4 | 3497 | B3 | | |
| 2439 | C3 | 3498 | B3 | | |
| 2440 | A4 | 3499 | A3 | | |
| 2441 | A3 | 3500 | E2 | | |
| 2442 | B8 | 3501 | E2 | | |
| 2443 | B9 | 3502 | F15 | | |
| 2444 | L2 | 3751 | K24 | | |
| 2445 | B29 | 3752 | L24 | | |
| 2447 | B29 | 3753 | M24 | | |
| 2448 | D29 | 3764 | M25 | | |
| 2449 | E29 | 3765 | M24 | | |
| 2454 | C20 | 3766 | M24 | | |
| 2455 | N23 | 3767 | K29 | | |
| 2456 | B13 | 3768 | K29 | | |
| 2457 | N20 | 3769 | L29 | | |
| 2458 | B15 | 3770 | L29 | | |
| 2459 | N23 | 3778 | M29 | | |
| 2460 | O23 | 3779 | M29 | | |
| 2461 | N2 | 3780 | M29 | | |
| 2462 | E13 | 3781 | N29 | | |
| 2463 | K24 | 3785 | J9 | | |
| 2464 | L24 | 3786 | J9 | | |
| 2465 | L24 | 5400 | F8 | | |
| 2476 | L25 | 5401 | J6 | | |
| 2477 | M24 | 5402 | G8 | | |
| 2478 | N24 | 5403 | B15 | | |
| 2485 | I9 | 6400 | C12 | | |
| 2486 | K9 | 6401 | M5 | | |
| 3391 | B13 | 6402 | M10 | | |
| 3392 | B13 | 6403 | M13 | | |
| 3393 | N4 | 6404 | E23 | | |
| 3394 | L3 | 6405 | F23 | | |
| 3395 | L20 | 6406 | G23 | | |
| 3400 | E12 | 6407 | I7 | | |
| 3401 | E4 | 6408 | H7 | | |
| 3402 | E3 | 6409 | H7 | | |
| 3403 | A2 | 6410 | M5 | | |
| 3404 | D12 | 6412 | M5 | | |
| 3405 | A3 | 6413 | J7 | | |
| 3406 | G2 | 6414 | H22 | | |
| 3407 | I2 | 6415 | I7 | | |
| 3408 | L14 | 6416 | I7 | | |
| 3409 | F12 | 6417 | J7 | | |
| 3410 | B9 | 6418 | I7 | | |
| 3411 | B8 | 6419 | H23 | | |
| 3413 | C2 | 6420 | I23 | | |
| 3414 | M2 | 6421 | M5 | | |
| 3415 | F13 | 6424 | H12 | | |
| 3416 | F11 | 7402 | A12 | | |
| 3417 | B22 | 7403 | F12 | | |

# FRONT BOARD - COMPONENT & COPPER SIDE VIEW

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1400 | C9 | 1407 | C4 | 1414 | C5 | 1421 | C6 | 1434 | A9 | 2409 | B9 | 2486 | A8 | 3408 | A9 |
| 1401 | A9 | 1408 | C5 | 1415 | C7 | 1422 | B7 | 1435 | B1 | 2412 | A6 | 3401 | A9 | 3412 | A9 |
| 1402 | A9 | 1409 | C7 | 1416 | C2 | 1423 | B9 | 1436 | B1 | 2420 | A3 | 3402 | A9 | 3413 | B9 |
| 1403 | B3 | 1410 | A8 | 1417 | A1 | 1426 | A7 | 1437 | B9 | 2428 | B8 | 3404 | A1 | 3424 | B6 |
| 1404 | C9 | 1411 | C5 | 1418 | C2 | 1429 | C8 | 1439 | B9 | 2429 | A6 | 3405 | A9 | 3426 | B6 |
| 1405 | C8 | 1412 | C4 | 1419 | C2 | 1430 | C8 | 1440 | A1 | 2455 | A6 | 3406 | B3 | 3427 | B2 |
| 1406 | C9 | 1413 | C5 | 1420 | B8 | 1433 | A9 | 2400 | A1 | 2456 | A6 | 3407 | A8 | 3432 | A5 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3435 | C7 | 3453 | B5 | 5403 | B3 | 6407 | A7 | 6414 | A5 | 6421 | B2 | 9402 | B3 | 9409 | C3 |
| 3436 | C7 | 3457 | B2 | 6401 | B2 | 6408 | A7 | 6415 | A2 | 6422 | C2 | 9403 | B4 | 9410 | A1 |
| 3443 | C7 | 3488 | A2 | 6402 | B2 | 6409 | A7 | 6416 | B7 | 6423 | C2 | 9404 | B3 | 9411 | B4 |
| 3444 | C4 | 3489 | A6 | 6403 | B3 | 6410 | A7 | 6417 | B7 | 7403 | A2 | 9405 | C3 | 9412 | B5 |
| 3447 | A6 | 5400 | B9 | 6404 | C7 | 6411 | A8 | 6418 | B7 | 7413 | A4 | 9406 | C3 | 9413 | B5 |
| 3448 | A6 | 5401 | B8 | 6405 | C4 | 6412 | A2 | 6419 | C2 | 7414 | A4 | 9407 | C3 | 9414 | B5 |
| 3452 | C4 | 5402 | A7 | 6406 | C5 | 6413 | B7 | 6420 | C8 | 9401 | B3 | 9408 | C3 | 9415 | B5 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 9416 | B5 | 9423 | B6 | 9430 | B3 | 9438 | B7 | 9446 | A8 | 9453 | A2 | 9461 | A6 | 9470 | C2 |
| 9417 | B8 | 9424 | B6 | 9431 | B7 | 9439 | B7 | 9447 | A8 | 9454 | C8 | 9462 | A5 | 9471 | C2 |
| 9418 | B8 | 9425 | A6 | 9432 | A7 | 9440 | C8 | 9448 | B8 | 9455 | C2 | 9463 | C6 | 9472 | C2 |
| 9419 | C6 | 9426 | A6 | 9433 | A6 | 9442 | C8 | 9449 | B8 | 9456 | B3 | 9464 | A8 | 9473 | C2 |
| 9420 | B6 | 9427 | B5 | 9434 | B7 | 9443 | C8 | 9450 | B8 | 9457 | A2 | 9465 | A8 | | |
| 9421 | A5 | 9428 | B6 | 9435 | C8 | 9444 | C9 | 9451 | B8 | 9458 | B4 | 9466 | A2 | | |
| 9422 | B5 | 9429 | A6 | 9436 | C4 | 9445 | B4 | 9452 | A8 | 9459 | A1 | 9467 | B3 | | |



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2401 | B8 | 2415 | B6 | 2432 | A7 | 2443 | C1 | 2465 | A7 | 2476 | A6 | 3403 | B3 | 3421 | B4 |
| 2402 | B1 | 2416 | B6 | 2433 | A7 | 2444 | A2 | 2466 | A7 | 2477 | A6 | 3409 | A8 | 3422 | B1 |
| 2403 | B1 | 2417 | B2 | 2434 | B7 | 2454 | B5 | 2467 | A7 | 2478 | A6 | 3410 | C1 | 3428 | B7 |
| 2404 | A4 | 2419 | A3 | 2435 | B7 | 2457 | A4 | 2468 | A7 | 2485 | A3 | 3411 | C1 | 3429 | B7 |
| 2405 | B5 | 2421 | C4 | 2436 | A1 | 2458 | A6 | 2469 | A7 | 3391 | C5 | 3414 | A4 | 3430 | B8 |
| 2407 | B1 | 2422 | C4 | 2437 | A1 | 2459 | A4 | 2470 | A7 | 3392 | A8 | 3415 | A8 | 3431 | B7 |
| 2408 | B1 | 2423 | B3 | 2438 | B4 | 2460 | A4 | 2471 | A7 | 3393 | B1 | 3416 | B1 | 3433 | B8 |
| 2410 | A1 | 2424 | B3 | 2439 | B4 | 2461 | A3 | 2472 | A7 | 3394 | A2 | 3417 | B5 | 3434 | B2 |
| 2411 | B8 | 2425 | B1 | 2440 | B4 | 2462 | C2 | 2473 | A6 | 3395 | A7 | 3418 | B5 | 3437 | B8 |
| 2413 | B4 | 2426 | B1 | 2441 | B4 | 2463 | A7 | 2474 | A6 | 3396 | A7 | 3419 | B5 | 3438 | B7 |
| 2414 | B7 | 2431 | A7 | 2442 | C1 | 2464 | A7 | 2475 | A6 | 3400 | A8 | 3420 | B5 | 3439 | B7 |

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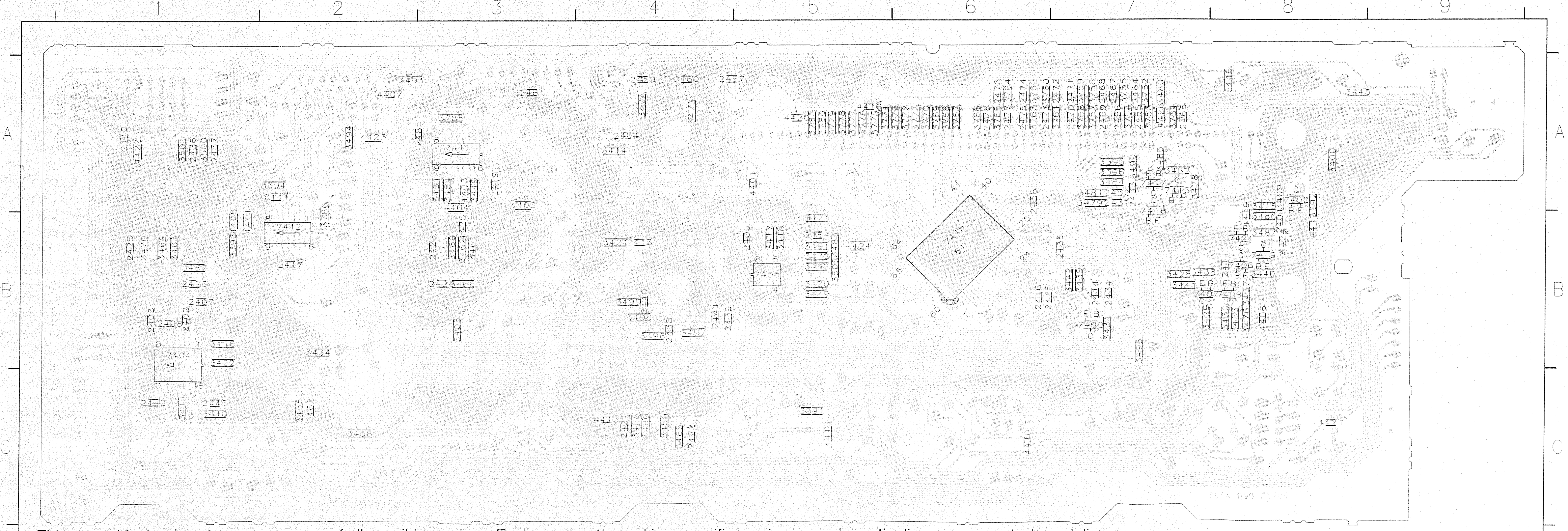
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3440 | B8 | 3460 | C4 | 3472 | B5 | 3484 | A7 | 3497 | B4 | 3756 | A7 | 3767 | A6 | 3778 | A5 |
| 3441 | B7 | 3461 | B3 | 3473 | A4 | 3485 | A7 | 3498 | B4 | 3757 | A7 | 3768 | A6 | 3779 | A5 |
| 3442 | B7 | 3462 | B3 | 3474 | A4 | 3486 | B8 | 3499 | B4 | 3758 | A7 | 3769 | A6 | 3780 | A5 |
| 3445 | A8 | 3463 | B1 | 3475 | B5 | 3487 | B8 | 3500 | A1 | 3759 | A7 | 3770 | A6 | 3781 | A5 |
| 3446 | A8 | 3464 | B1 | 3476 | B8 | 3490 | A7 | 3501 | A1 | 3760 | A6 | 3771 | A6 | 3785 | A3 |
| 3449 | A3 | 3465 | C4 | 3478 | A7 | 3491 | B5 | 3502 | B5 | 3761 | A7 | 3772 | A6 | 3786 | B2 |
| 3451 | A3 | 3466 | B3 | 3479 | A7 | 3492 | B5 | 3751 | A7 | 3762 | A6 | 3773 | A6 | 4401 | A5 |
| 3454 | A3 | 3467 | B1 | 3480 | A7 | 3493 | A2 | 3752 | A7 | 3763 | A6 | 3774 | A5 | 4402 | A3 |
| 3455 | C2 | 3468 | C4 | 3481 | A7 | 3494 | A2 | 3753 | A7 | 3764 | A6 | 3775 | A5 | 4403 | A3 |
| 3458 | C2 | 3469 | B3 | 3482 | A7 | 3495 | B7 | 3754 | A7 | 3765 | A6 | 3776 | A5 | 4404 | A3 |
| 3459 | C4 | 3470 | B1 | 3483 | B5 | 3496 | B4 | 3755 | A7 | 3766 | A6 | 3777 | A5 | 4406 | B8 |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 4407 | A2 | 4422 | A1 | 7408 | B8 | F401 | A1 | F412 | A2 | F426 | B7 | F437 | C8 | F457 | C8 |
| 4408 | B1 | 4423 | A2 | 7409 | B7 | F402 | A1 | F413 | A2 | F427 | A4 | F438 | C2 | F458 | C8 |
| 4410 | C6 | 4424 | B5 | 7411 | A3 | F403 | A1 | F414 | A2 | F428 | A3 | F439 | C5 | F459 | C8 |
| 4411 | B1 | 4425 | B3 | 7412 | B2 | F404 | A1 | F415 | A2 | F429 | A4 | F440 | C5 | F460 | B7 |
| 4413 | C4 | 4426 | A7 | 7415 | B6 | F405 | A1 | F416 | A2 | F430 | A3 | F441 | C7 | F461 | B7 |
| 4416 | A5 | 6424 | B8 | 7416 | A7 | F406 | A1 | F417 | B1 | F431 | A3 | F442 | C8 | F463 | A2 |
| 4417 | B8 | 7402 | A8 | 7417 | A7 | F407 | A1 | F421 | A2 | F432 | A3 | F443 | B2 | | |
| 4418 | C5 | 7404 | B1 | 7418 | B7 | F408 | A2 | F422 | A2 | F433 | A4 | F453 | A5 | | |
| 4419 | B8 | 7405 | B5 | 7419 | B8 | F409 | A2 | F423 | A2 | F434 | A4 | F454 | A1 | | |
| 4420 | A5 | 7406 | B8 | 7421 | B8 | F410 | A2 | F424 | A2 | F435 | C5 | F455 | C8 | | |
| 4421 | C8 | 7407 | B7 | F400 | A1 | F411 | A2 | F425 | A2 | F436 | C5 | F456 | C8 | | |



This assembly drawing shows a summary of all possible versions. For components used in a specific version see schematic diagram respectively partslist.

## *ELECTRICAL PARTSLIST - FRONT BOARD*

### MISCELLANEOUS

| | | |
|---|---|---|
| 1400 | 4822 242 11033 | CRYSTAL (4,332MH) |
| 1403 | 4822 242 72066 | CST8,00MT |
| 1404 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1405 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1406 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1407 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1408 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1409 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1410 | 4822 265 10981 | 15FE-BT-VK-N |
| 1411 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1412 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1413 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1414 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1415 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1416 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1417 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1418 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1419 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1420 | 4822 276 13114 | SWITCH, PUSH BUTTON |
| 1421 | 4822 273 10372 | SWITCH, ROTARY |
| 1422 | 4822 273 10372 | SWITCH, ROTARY |
| 1423 | 4822 273 10365 | ROTARY ENCODER 24P |
| 1424 | 4822 265 11584 | 1P YKB21-5209 |
| 1428 | 4822 265 11336 | 3P. FEM. CINCH |
| 8002 | 4822 320 12706 | FLEXIBLE FOIL 15P 220MM |

### CAPACITORS

| | | |
|---|---|---|
| 2400 | 4822 124 41584 | 100UF 20% 10V |
| 2402 | 5322 122 31647 | 1NF10%X7R 63V |
| 2403 | 5322 116 80853 | 560PF 5%NP0 63V |
| 2404 | 5322 122 31647 | 1NF10%X7R 63V |
| 2405 | 5322 122 32654 | 22NF10%X7R 63V |
| 2407 | 5322 122 34099 | 470PF10%X7R 63V |
| 2408 | 5322 122 32654 | 22NF10%X7R 63V |
| 2409 | 4822 124 22652 | 2,2UF20% 50V |
| 2410 | 5322 122 32654 | 22NF10%X7R 63V |
| 2411 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2412 | 4822 124 41751 | 47UF 20% 50V |
| 2413 | 5322 122 32654 | 22NF10%X7R 63V |
| 2414 | 5322 122 32654 | 22NF10%X7R 63V |
| 2415 | 5322 122 32658 | 22PF 5% 50V |
| 2416 | 5322 122 32658 | 22PF 5% 50V |
| 2417 | 5322 122 32654 | 22NF10%X7R 63V |
| 2419 | 5322 122 32654 | 22NF10%X7R 63V |
| 2420 | 4822 124 23432 | 100UF20% 10V |
| 2421 | 5322 122 32654 | 22NF10%X7R 63V |
| 2422 | 5322 122 32654 | 22NF10%X7R 63V |
| 2423 | 5322 122 32654 | 22NF10%X7R 63V |
| 2424 | 5322 122 32654 | 22NF10%X7R 63V |
| 2425 | 5322 122 32654 | 22NF10%X7R 63V |
| 2426 | 5322 122 32654 | 22NF10%X7R 63V |
| 2427 | 5322 122 31647 | 1NF10%X7R 63V |
| 2428 | 4822 124 40769 | 4,7UF20% 100V |
| 2429 | 4822 124 41751 | 47UF 20% 50V |
| 2430 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2431 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2432 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2433 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2434 | 4822 126 14076 | 220N 25V. P8020 |
| 2435 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2436 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2437 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2438 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2439 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2440 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2441 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2442 | 4822 126 13692 | 47PF 1% NP0 63V |
| 2443 | 4822 126 13692 | 47PF 1% NP0 63V |
| 2444 | 5322 122 32654 | 22NF10%X7R 63V |
| 2445 | 5322 126 10223 | 4,7NF10%X7R 63V |
| 2447 | 5322 126 10223 | 4,7NF10%X7R 63V |
| 2448 | 5322 122 31647 | 1NF10%X7R 63V |
| 2454 | 5322 122 32654 | 22NF10%X7R 63V |
| 2455 | 4822 124 41751 | 47UF 20% 50V |
| 2456 | 4822 124 40433 | 47UF20% 25V |
| 2457 | 5322 122 32654 | 22NF10%X7R 63V |
| 2458 | 5322 122 32654 | 22NF10%X7R 63V |
| 2459 | 5322 122 32654 | 22NF10%X7R 63V |
| 2460 | 5322 122 32654 | 22NF10%X7R 63V |
| 2461 | 5322 122 32654 | 22NF10%X7R 63V |
| 2462 | 5322 122 31647 | 1NF10%X7R 63V |
| 2463 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2464 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2465 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2466 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2467 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2468 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2469 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2470 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2471 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2472 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2473 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2474 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2475 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2476 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2477 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2478 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2485 | 5322 122 31647 | 1NF10%X7R 63V |
| 2486 | 4822 122 33197 | 1NF 10% 50V |

### RESISTORS

| | | |
|---|---|---|
| 3391 | 4822 051 10102 | 1K00 2% 0,25W |
| 3392 | 4822 051 20223 | 22K00 5% 0,1W |
| 3393 | 4822 051 20223 | 22K00 5% 0,1W |
| 3394 | 4822 051 20223 | 22K00 5% 0,1W |
| 3395 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3400 | 4822 051 20479 | 47R00 5% 0,1W |
| 3401 | 4822 050 21003 | 10K00 1% 0,6W |
| 3402 | 4822 050 21003 | 10K00 1% 0,6W |
| 3403 | 4822 117 11507 | 6K8 1% 0,1W |
| 3404 | 4822 116 52219 | 330E 5% 0,5W |
| 3405 | 4822 116 52257 | 22K 5% 0,5W |
| 3406 | 4822 050 21003 | 10K00 1% 0,6W |
| 3407 | 4822 050 21003 | 10K00 1% 0,6W |
| 3408 | 4822 050 21003 | 10K00 1% 0,6W |
| 3409 | 4822 051 10102 | 1K00 2% 0,25W |
| 3410 | 4822 117 11449 | 2K2 1% 0,1W |
| 3411 | 4822 117 13579 | 220K 1% 0.1W |
| 3413 | 4822 050 11002 | 1K00 1% 0,4W |
| 3414 | 4822 051 10102 | 1K00 2% 0,25W |
| 3415 | 4822 051 20008 | 0R00 JUMP. |
| 3416 | 4822 117 10833 | 10K 1% 0,1W |
| 3417 | 4822 117 10833 | 10K 1% 0,1W |
| 3418 | 4822 117 10833 | 10K 1% 0,1W |
| 3419 | 4822 117 10833 | 10K 1% 0,1W |
| 3420 | 4822 117 10833 | 10K 1% 0,1W |
| 3421 | 4822 117 10833 | 10K 1% 0,1W |
| 3422 | 4822 117 10833 | 10K 1% 0,1W |
| 3424 | 4822 050 11002 | 1K00 1% 0,4W |
| 3426 | 4822 050 11002 | 1K00 1% 0,4W |
| 3427 | 4822 116 83868 | 150R 5% 0,5W |
| 3428 | 4822 051 20273 | 27K00 5% 0,1W |
| 3429 | 4822 051 20223 | 22K00 5% 0,1W |
| 3430 | 4822 051 20223 | 22K00 5% 0,1W |
| 3431 | 4822 117 10833 | 10K 1% 0,1W |
| 3432 ▲ | 4822 052 10478 | 4R70 5% 0,33W |
| 3433 | 4822 117 10833 | 10K 1% 0,1W |
| 3434 | 4822 051 20223 | 22K00 5% 0,1W |
| 3435 | 4822 116 52257 | 22K 5% 0,5W |
| 3436 | 4822 116 52257 | 22K 5% 0,5W |
| 3437 | 4822 117 10837 | 100K 1% 0.1W |
| 3438 | 4822 117 13579 | 220K 1% 0.1W |
| 3439 | 4822 117 10833 | 10K 1% 0,1W |
| 3440 | 4822 051 20479 | 47R00 5% 0,1W |
| 3441 | 4822 117 11149 | 82K 1% 0,1W |
| 3442 | 4822 117 10837 | 100K 1% 0.1W |
| 3443 | 4822 116 52219 | 330E 5% 0,5W |
| 3444 | 4822 116 52219 | 330E 5% 0,5W |
| 3445 | 4822 117 13577 | 330R 1% 1,25W |
| 3446 | 4822 117 13577 | 330R 1% 1,25W |
| 3447 | 4822 116 52219 | 330E 5% 0,5W |
| 3448 | 4822 116 52219 | 330E 5% 0,5W |
| 3449 | 4822 117 10837 | 100K 1% 0.1W |
| 3451 | 4822 117 10833 | 10K 1% 0,1W |
| 3452 | 4822 116 52219 | 330E 5% 0,5W |
| 3453 | 4822 116 52219 | 330E 5% 0,5W |
| 3455 | 4822 051 20223 | 22K00 5% 0,1W |
| 3457 | 4822 116 52219 | 330E 5% 0,5W |
| 3458 | 4822 117 13577 | 330R 1% 1,25W |
| 3459 | 4822 117 10833 | 10K 1% 0,1W |
| 3460 | 4822 117 10833 | 10K 1% 0,1W |
| 3461 | 4822 117 10833 | 10K 1% 0,1W |
| 3462 | 4822 117 10833 | 10K 1% 0,1W |
| 3463 | 4822 117 10833 | 10K 1% 0,1W |
| 3464 | 4822 117 10833 | 10K 1% 0,1W |
| 3465 | 4822 117 11503 | 220R 1% 0.1W |
| 3466 | 4822 117 11503 | 220R 1% 0.1W |
| 3467 | 4822 117 11503 | 220R 1% 0.1W |
| 3468 | 4822 117 11503 | 220R 1% 0.1W |
| 3469 | 4822 117 11503 | 220R 1% 0.1W |
| 3470 | 4822 117 11503 | 220R 1% 0.1W |
| 3471 | 4822 051 10102 | 1K00 2% 0,25W |
| 3472 | 4822 051 10102 | 1K00 2% 0,25W |
| 3473 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3474 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3475 | 4822 117 10837 | 100K 1% 0.1W |
| 3477 | 4822 117 12521 | 68R 1% 0,1W |
| 3478 | 4822 117 10837 | 100K 1% 0.1W |
| 3479 | 4822 051 10102 | 1K00 2% 0,25W |
| 3480 | 4822 117 10837 | 100K 1% 0.1W |
| 3481 | 4822 051 10102 | 1K00 2% 0,25W |
| 3482 | 4822 117 10837 | 100K 1% 0.1W |
| 3484 | 4822 051 10102 | 1K00 2% 0,25W |
| 3485 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3491 | 4822 117 10837 | 100K 1% 0.1W |
| 3493 | 4822 051 20471 | 470R00 5% 0,1W |
| 3494 | 4822 051 20471 | 470R00 5% 0,1W |
| 3495 | 4822 051 20471 | 470R00 5% 0,1W |
| 3496 | 4822 051 20471 | 470R00 5% 0,1W |
| 3497 | 4822 051 20471 | 470R00 5% 0,1W |
| 3498 | 4822 051 20471 | 470R00 5% 0,1W |
| 3499 | 4822 051 20471 | 470R00 5% 0,1W |
| 3500 | 4822 051 20471 | 470R00 5% 0,1W |
| 3501 | 4822 051 20471 | 470R00 5% 0,1W |
| 3502 | 4822 051 10102 | 1K00 2% 0,25W |
| 3751 | 4822 051 20333 | 33K00 5% 0,1W |
| 3752 | 4822 051 20333 | 33K00 5% 0,1W |
| 3753 | 4822 051 20333 | 33K00 5% 0,1W |
| 3754 | 4822 051 20333 | 33K00 5% 0,1W |
| 3755 | 4822 051 20333 | 33K00 5% 0,1W |
| 3756 | 4822 051 20333 | 33K00 5% 0,1W |
| 3757 | 4822 051 20333 | 33K00 5% 0,1W |
| 3758 | 4822 051 20333 | 33K00 5% 0,1W |
| 3759 | 4822 051 20333 | 33K00 5% 0,1W |
| 3760 | 4822 051 20333 | 33K00 5% 0,1W |
| 3761 | 4822 051 20333 | 33K00 5% 0,1W |
| 3762 | 4822 051 20333 | 33K00 5% 0,1W |
| 3763 | 4822 051 20333 | 33K00 5% 0,1W |
| 3764 | 4822 051 20333 | 33K00 5% 0,1W |
| 3765 | 4822 051 20333 | 33K00 5% 0,1W |
| 3766 | 4822 051 20333 | 33K00 5% 0,1W |
| 3767 | 4822 051 20333 | 33K00 5% 0,1W |
| 3768 | 4822 051 20333 | 33K00 5% 0,1W |
| 3769 | 4822 051 20333 | 33K00 5% 0,1W |
| 3770 | 4822 051 20333 | 33K00 5% 0,1W |
| 3771 | 4822 051 20333 | 33K00 5% 0,1W |
| 3772 | 4822 051 20333 | 33K00 5% 0,1W |
| 3773 | 4822 051 20333 | 33K00 5% 0,1W |
| 3774 | 4822 051 20333 | 33K00 5% 0,1W |
| 3775 | 4822 051 20333 | 33K00 5% 0,1W |
| 3776 | 4822 051 20333 | 33K00 5% 0,1W |
| 3777 | 4822 051 20333 | 33K00 5% 0,1W |
| 3778 | 4822 051 20333 | 33K00 5% 0,1W |
| 3779 | 4822 051 20333 | 33K00 5% 0,1W |
| 3780 | 4822 051 20333 | 33K00 5% 0,1W |
| 3781 | 4822 051 20333 | 33K00 5% 0,1W |
| 3785 | 4822 051 10102 | 1K00 2% 0,25W |
| 3786 | 4822 051 10102 | 1K00 2% 0,25W |
| 4401 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4402 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4403 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4404 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4406 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4407 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4408 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4410 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4411 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4413 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4416 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4417 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4418 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4420 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4421 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4422 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4423 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4424 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4425 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4426 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4450 | 4822 051 20008 | 0R00 JUMP. (0805) |

### COILS & FILTERS

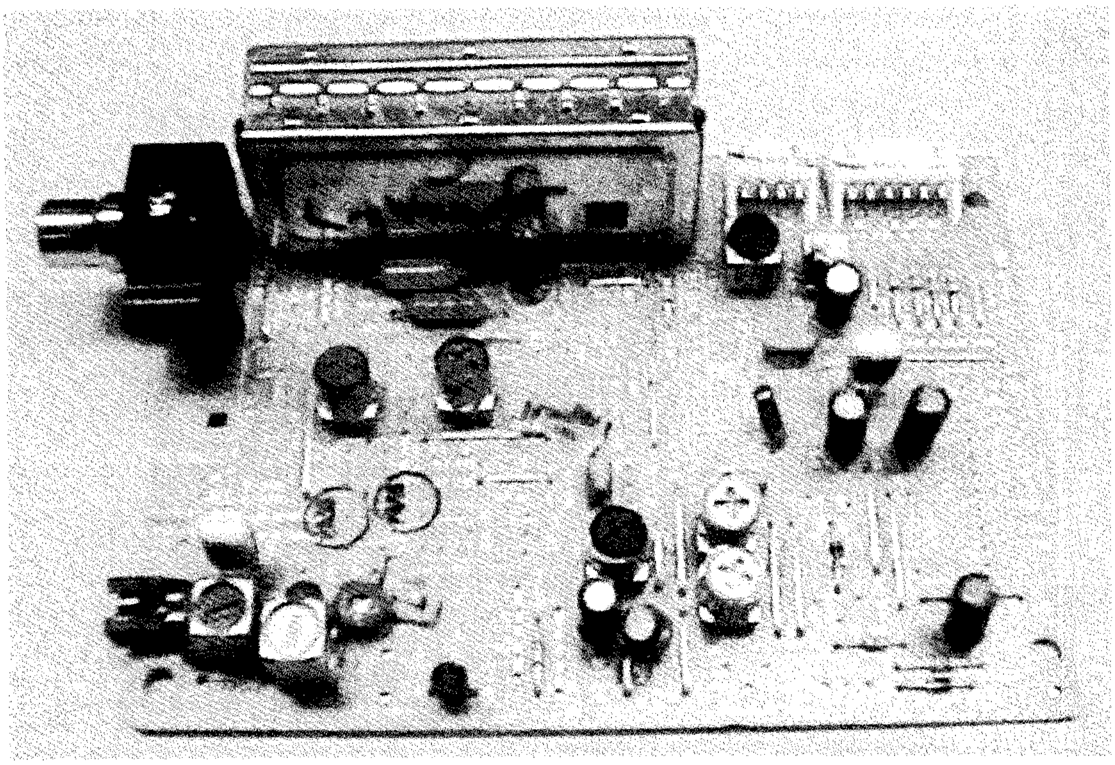
| | | |
|---|---|---|
| 5400 | 4822 157 11477 | LAL02TB2R2J |
| 5401 | 4822 157 11477 | LAL02TB2R2J |
| 5402 | 4822 157 11477 | LAL02TB2R2J |
| 5403 | 4822 157 11477 | LAL02TB2R2J |

### DIODES

| | | |
|---|---|---|
| 6400 | 9322 100 14682 | LTL1214A |
| 6401 | 4822 130 82978 | LTL-16KPE-P |
| 6402 | 4822 130 30621 | 1N4148 |
| 6403 | 4822 130 30621 | 1N4148 |
| 6404 | 4822 130 30621 | 1N4148 |
| 6405 | 4822 130 30621 | 1N4148 |
| 6406 | 4822 130 30621 | 1N4148 |
| 6407 | 4822 130 82978 | LTL-16KPE-P |
| 6408 | 4822 130 82978 | LTL-16KPE-P |
| 6409 | 4822 130 82978 | LTL-16KPE-P |
| 6410 | 4822 130 82978 | LTL-16KPE-P |
| 6412 | 4822 130 82978 | LTL-16KPE-P |
| 6413 | 4822 130 82978 | LTL-16KPE-P |
| 6414 | 4822 130 30621 | 1N4148 |
| 6415 | 4822 130 82978 | LTL-16KPE-P |
| 6416 | 4822 130 82978 | LTL-16KPE-P |
| 6417 | 4822 130 82978 | LTL-16KPE-P |
| 6418 | 4822 130 82978 | LTL-16KPE-P |
| 6419 | 4822 130 30621 | 1N4148 |
| 6420 | 4822 130 30621 | 1N4148 |
| 6421 | 4822 130 82978 | LTL-16KPE-P |

### TRANSISTORS & ICs

| | | |
|---|---|---|
| 7402 | 4822 130 11607 | PDTA144ET |
| 7403 | 4822 130 10165 | GP1U28XP |
| 7404 | 4822 209 31981 | SAA6579T |
| 7405 | 4822 209 17445 | M24C08-MN6 |
| 7406 | 4822 130 60511 | BC847B |
| 7407 | 4822 130 60511 | BC847B |
| 7408 | 4822 130 60511 | BC847B |
| 7409 | 4822 130 60511 | BC847B |
| 7411 | 5322 209 11306 | HEF4094BT |
| 7412 | 5322 209 11306 | HEF4094BT |
| 7413 | 2722 171 07168 | 16-MT-65GK |
| 7415 | 3103 308 84190 | TMP87CS71F/FR975.1 |
| 7416 | 4822 130 60511 | BC847B |
| 7417 | 4822 130 60511 | BC847B |
| 7418 | 4822 130 60511 | BC847B |



# TUNER 95 BOARD

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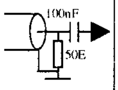
Partslist .......... 7A-6

## **TUNER 95 bis Adjustment Table** (FM, MW, LW with Frame antenna)

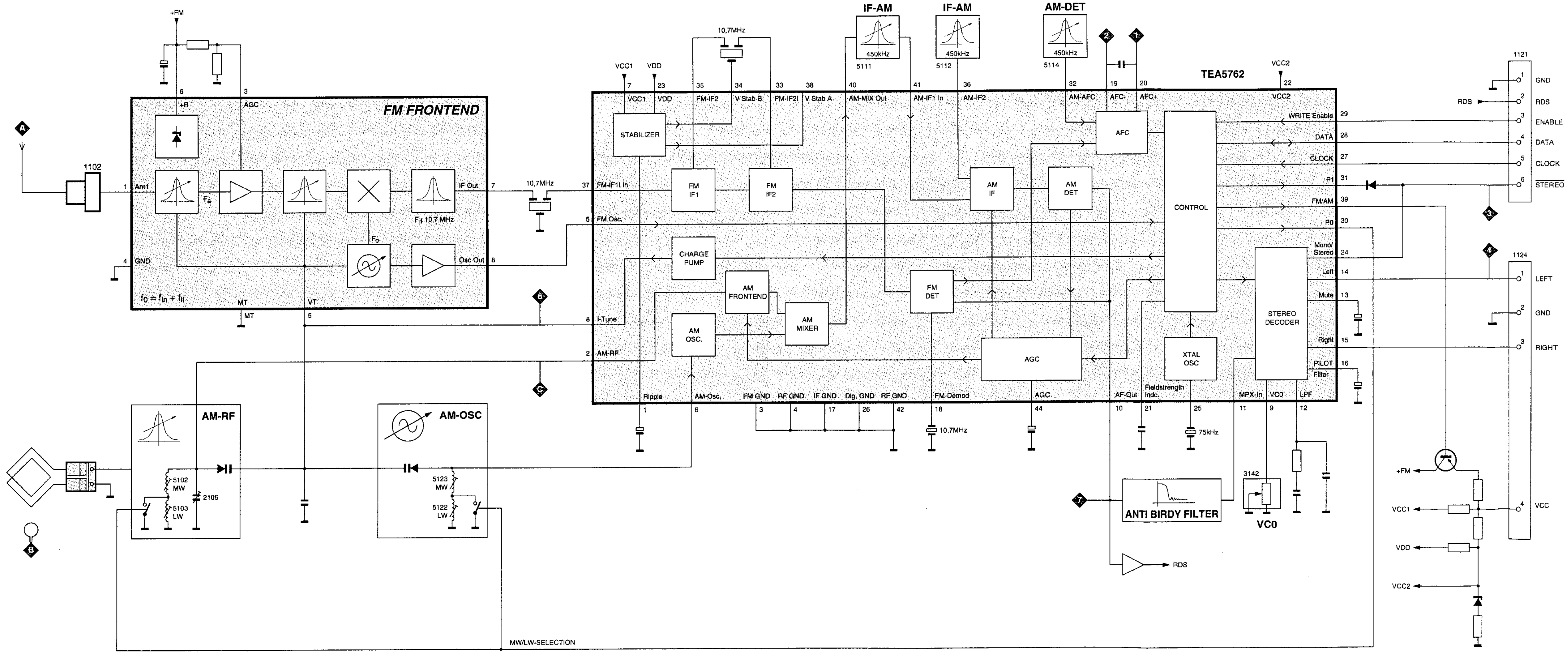
| **Waverange** | **Input frequency** | **Input** | **Set tuned to** | **Adjust** | **Output** | **Scope / Voltmeter** |
|---|---|---|---|---|---|---|
| *VARICAP ALIGNMENT* | | | | | | |
| **FM** (50) | | | 108 MHz | check | 6 | 7 ... 9V |
| 87.5 - 108 MHz | | | 87.5 MHz | check | | 1.3 ... 2V |
| **MW** (9) | | | 1602 kHz | 5123 | | 8.3V ± 0.2V |
| 531 - 1602 kHz | | | 531 kHz | check | | 1V ± 0.4V |
| **LW** (3) | | | 279 kHz | 5122 | | 8.3V ± 0.2V |
| 153 - 279 kHz | | | 153 kHz | check | | 1V ± 0.4V |
| *FM – DETECTION* | | | | | | |
| **FM** | 98 Mhz 1mV continuous wave<br>***short pin 21 (IC7101) to ground*** | A | 98 MHz | 5107 | 1<br>2 | 0mV ± 3mV |
| *FM – VCO* | | | | | | |
| **FM** | 98 Mhz 1 mV<br>continuous wave | A | 98 MHz | 3142 | 3 | 152kHz ± 1 kHz |
| *DISTORTION* | | | | | | |
| **FM** | 98 Mhz 1 mV<br>90 % L +<br>9 % pilot<br>mod = 1kHz | A | 98MHz | mixcoil inside Tuner 1110 | 4 | Distortion minimum |
| *AM – IF* | | | | | | |
| **MW** | 450kHz<br>Δf = 10kHz<br>Low as possible<br>Swept signal |  | MW | 5111<br>5112 | 7 | symmetrical and max. height ↕ |
| | 450kHz<br>continuous wave | C | | 5114 | 1<br>2 | 0mV ± 2mV |
| *AM - RF* | | | | | | |
| **MW** | 558kHz<br>Mod = 1kHz<br>30 % AM<br>1494 kHz | B | 558kHz<br>1494kHz | 5102<br>2106 | 7 | MAX ↕ |
| **LW** | 198kHz<br>mod = 1kHz<br>30 % AM | * | 198kHz | 5103 | | MAX |

adjtable for 3104 217 04121/04341

* Signal send via a frame antenna
(..) = tuning grid in kHz

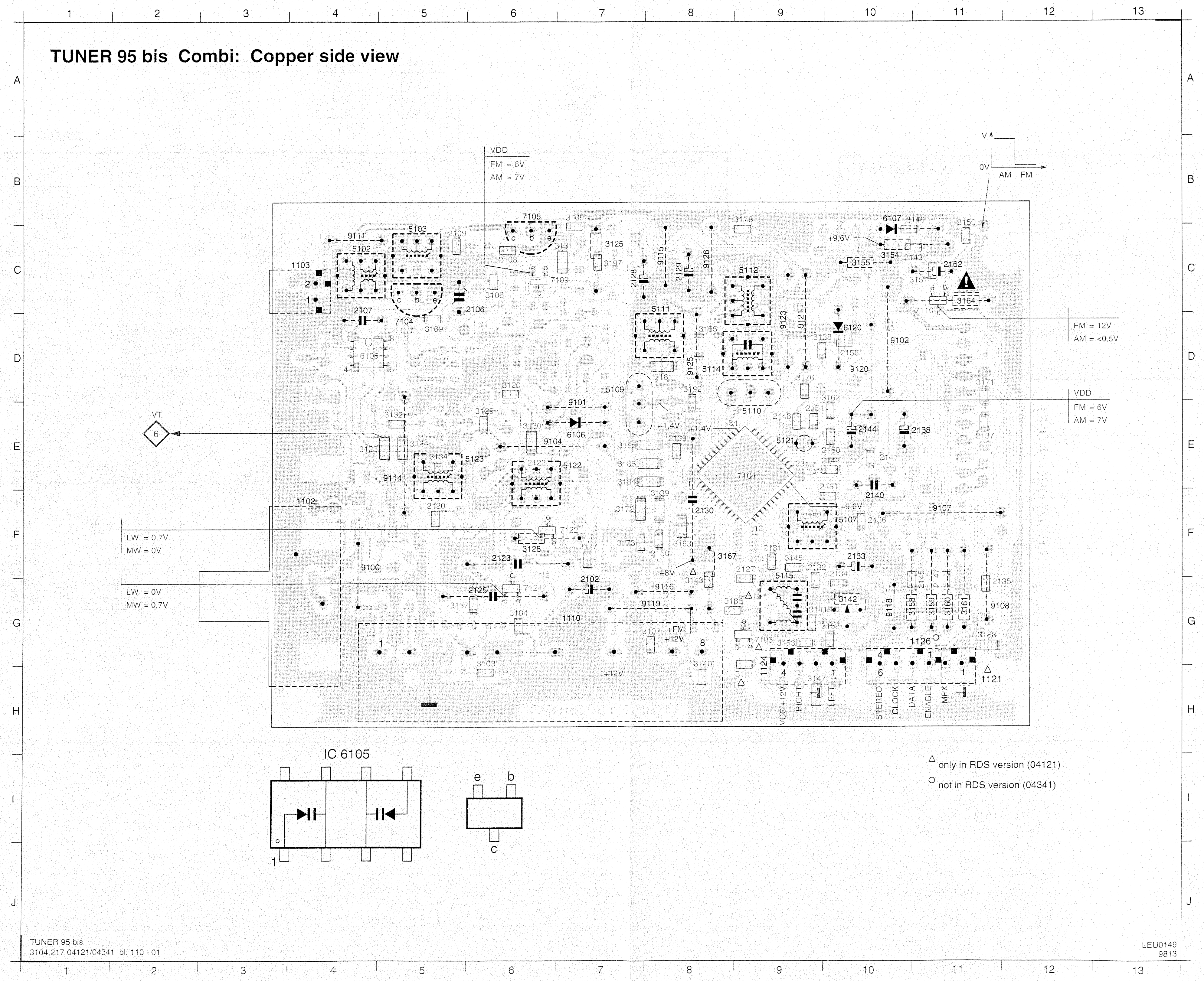
↕ repeat

# BLOCKDIAGRAM


+FM
FM FRONTEND
+B
AGC
6
3
A
1102
1
Ant1
$F_a$
IF Out
7
$F_{if}$ 10,7 MHz
$F_0$
Osc Out
8
4
GND
$f_0 = f_{in} + f_{if}$
MT
VT
5
10,7MHz
6
C
AM-RF
5102 MW
5103 LW
2106
B
AM-OSC
5123 MW
5122 LW
MW/LW-SELECTION
10,7MHz
VCC1
VDD
IF-AM
450kHz
5111
IF-AM
450kHz
5112
AM-DET
450kHz
5114
2
1
TEA5762
VCC2
22
7
23
35
34
33
38
40
41
36
32
19
20
VCC1
VDD
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
STABILIZER
AFC
CONTROL
37
FM-IF1 in
5
FM Osc.
FM IF1
FM IF2
AM IF
AM DET
CHARGE PUMP
FM DET
AM FRONTEND
AM MIXER
8
I-Tune
2
AM-RF
AM OSC.
AGC
XTAL OSC
STEREO DECODER
WRITE Enable
29
DATA
28
CLOCK
27
P1
31
FM/AM
39
P0
30
Mono/ Stereo
24
Left
14
Mute
13
Right
15
PILOT Filter
16
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
1
6
3
4
17
26
42
18
44
10
21
25
11
9
12
10,7MHz
75kHz
3142
7
ANTI BIRDY FILTER
VCO
RDS
1121
1
GND
RDS
2
RDS
3
ENABLE
4
DATA
5
CLOCK
6
STEREO
3
4
1124
1
LEFT
2
GND
3
RIGHT
4
VCC
+FM
VCC1
VDD
VCC2

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1102 | F4 | 2107 | C4 | 2128 | C7 | 2136 | G10 | 2144 | E10 | 2160 | E9 | 3120 | D6 | 3132 | E5 | 3143 | G8 | 3153 | G9 | 3163 | F8 | 3176 | D9 | 3188 | G11 | 5111 | C8 | 6106 | E7 | 7110 | D11 | 9108 | G11 | 9121 | D9 |
| 1103 | C4 | 2108 | C6 | 2129 | C8 | 2137 | E11 | 2145 | G11 | 2161 | E9 | 3123 | E4 | 3134 | E5 | 3144 | H9 | 3154 | C10 | 3164 | C11 | 3177 | F7 | 3192 | D8 | 5112 | C9 | 6107 | B10 | 7122 | F7 | 9111 | C4 | 9123 | D9 |
| 1110 | G7 | 2109 | C5 | 2130 | F8 | 2138 | E10 | 2147 | G11 | 2162 | C11 | 3124 | E5 | 3137 | G5 | 3145 | F9 | 3155 | C10 | 3165 | D8 | 3178 | B8 | 3197 | C7 | 5114 | D8 | 6120 | D10 | 7124 | G6 | 9114 | E5 | 9125 | D8 |
| 1121 | H11 | 2120 | F5 | 2131 | F9 | 2139 | E8 | 2148 | E9 | 3103 | H6 | 3125 | C7 | 3138 | D9 | 3146 | B10 | 3158 | G11 | 3167 | F8 | 3181 | D8 | 5102 | C4 | 5115 | G9 | 7101 | E9 | 9100 | F4 | 9115 | C8 | 9126 | C8 |
| 1124 | H9 | 2122 | E6 | 2132 | F9 | 2140 | F10 | 2150 | F8 | 3104 | G6 | 3128 | F6 | 3139 | F8 | 3147 | H9 | 3159 | G11 | 3169 | D5 | 3183 | E7 | 5103 | C5 | 5121 | E9 | 7103 | G9 | 9101 | E7 | 9116 | G8 | | |
| 1126 | G10 | 2123 | F6 | 2133 | F10 | 2141 | E10 | 2151 | F9 | 3107 | G7 | 3129 | E6 | 3140 | H8 | 3150 | C11 | 3160 | G11 | 3171 | D11 | 3184 | E7 | 5107 | F10 | 5122 | E7 | 7104 | D5 | 9102 | D10 | 9118 | G10 | | |
| 2102 | G7 | 2125 | G6 | 2134 | G10 | 2142 | E9 | 2152 | F9 | 3108 | C6 | 3130 | E6 | 3141 | G9 | 3151 | C10 | 3161 | G11 | 3172 | F7 | 3185 | E7 | 5109 | D7 | 5123 | E5 | 7105 | B6 | 9104 | E6 | 9119 | G7 | | |
| 2106 | C5 | 2127 | F9 | 2135 | G11 | 2143 | C10 | 2158 | D10 | 3109 | B7 | 3131 | C6 | 3142 | G10 | 3152 | G9 | 3162 | D9 | 3173 | F7 | 3186 | G8 | 5110 | E9 | 6105 | D4 | 7109 | C6 | 9107 | F11 | 9120 | D10 | | |

## TUNER 95 bis Combi: Copper side view


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
J
VDD
FM = 6V
AM = 7V
V
0V
AM
FM
FM = 12V
AM = <0,5V
VDD
FM = 6V
AM = 7V
VT
6
LW = 0,7V
MW = 0V
LW = 0V
MW = 0,7V
1103
1102
7101
6105
+9,6V
+1,4V
+1,4V
+8V
+FM
+12V
+12V
1124
1126
1121
VCC +12V
RIGHT
LEFT
STEREO
CLOCK
DATA
ENABLE
MPX
IC 6105
1
e
b
c

△ only in RDS version (04121)

○ not in RDS version (04341)

TUNER 95 bis
3104 217 04121/04341 bl. 110 - 01

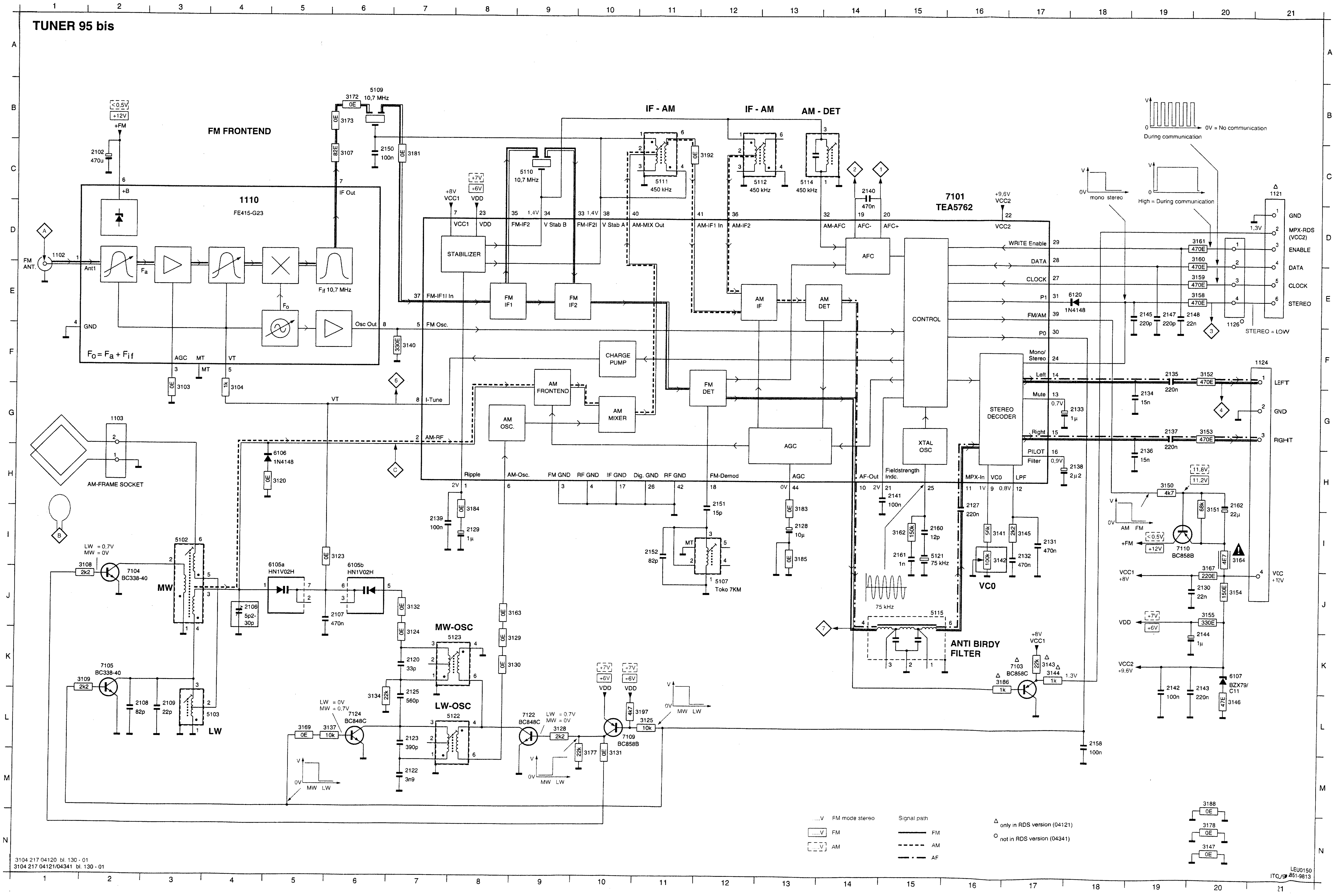
LEU0149
9813

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1102 | D1 | 1124 | F21 | 2107 | J6 | 2122 | M7 | 2128 | I13 | 2132 | I17 | 2136 | H19 | 2140 | C14 | 2144 | K20 | 2150 | C6 |
| 1103 | G2 | 1126 | E20 | 2108 | L2 | 2123 | L7 | 2129 | I8 | 2133 | G18 | 2137 | G19 | 2141 | H15 | 2145 | E19 | 2151 | H12 |
| 1110 | D4 | 2102 | C2 | 2109 | L3 | 2125 | L7 | 2130 | J20 | 2134 | G19 | 2138 | H18 | 2142 | K19 | 2147 | E19 | 2152 | I11 |
| 1121 | C21 | 2106 | J4 | 2120 | K7 | 2127 | H16 | 2131 | I17 | 2135 | F19 | 2139 | I7 | 2143 | K20 | 2148 | E19 | 2158 | L18 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2160 | I15 | 3104 | G4 | 3120 | H5 | 3128 | L9 | 3132 | J7 | 3141 | I16 | 3145 | I17 | 3151 | I20 | 3155 | J20 | 3161 | D19 |
| 2161 | I15 | 3107 | C6 | 3123 | I6 | 3129 | K8 | 3134 | L6 | 3142 | I16 | 3146 | L20 | 3152 | F20 | 3158 | E19 | 3162 | I15 |
| 2162 | H20 | 3108 | J1 | 3124 | K7 | 3130 | K8 | 3137 | L5 | 3143 | K17 | 3147 | N20 | 3153 | G20 | 3159 | E19 | 3163 | J8 |
| 3103 | G3 | 3109 | K1 | 3125 | L11 | 3131 | M10 | 3140 | F7 | 3144 | K17 | 3150 | H19 | 3154 | J20 | 3160 | D19 | 3164 | I20 |

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 3167 | I20 | 3177 | M10 | 3184 | I8 | 3192 | C12 | 5107 | J12 | 5112 | C12 | 5122 | L7 | 6106 | H5 | 7103 | K17 | 7110 | I19 |
| 3169 | L5 | 3178 | N20 | 3185 | I13 | 3197 | L11 | 5109 | B6 | 5114 | C13 | 5123 | K7 | 6107 | K20 | 7104 | J2 | 7122 | L9 |
| 3172 | B6 | 3181 | C7 | 3186 | K16 | 5102 | I3 | 5110 | C9 | 5115 | J15 | 6105a | I5 | 6120 | E17 | 7105 | K2 | 7124 | L6 |
| 3173 | B6 | 3183 | I13 | 3188 | M20 | 5103 | L4 | 5111 | C11 | 5121 | I15 | 6105b | I6 | 7101 | C15 | 7109 | L10 | | |

# TUNER 95 bis


1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
A B C D E F G H I J K L M N
FM FRONTEND
<0.5V
+12V
+FM
2102 470µ
1110
FE415-G23
+B
IF Out
FM ANT.
1102
Ant1
Fa
Fif 10,7 MHz
Fo
Osc Out
GND
Fo = Fa + Fif
AGC
MT
VT
3103 0E
3104 1k
5109 10,7 MHz
3172 0E
3173 0E
3107 82E
2150 100n
3181 0E
5110 10,7 MHz
3140 330E
IF - AM
IF - AM
AM - DET
5111 450 kHz
3192 0E
5112 450 kHz
5114 450 kHz
2140 470n
7101
TEA5762
+8V VCC1
+7V
+6V
VDD
+9,6V VCC2
VCC1
VDD
FM-IF2
V Stab B
FM-IF2I
V Stab A
AM-MIX Out
AM-IF1 In
AM-IF2
AM-AFC
AFC-
AFC+
VCC2
STABILIZER
AFC
CONTROL
FM-IF1I In
FM Osc.
I-Tune
AM-RF
FM IF1
FM IF2
AM IF
AM DET
CHARGE PUMP
AM FRONTEND
AM MIXER
AM OSC.
FM DET
AGC
XTAL OSC
STEREO DECODER
WRITE Enable
DATA
CLOCK
P1
FM/AM
P0
Mono/Stereo
Left
Mute
Right
PILOT Filter
Ripple
AM-Osc.
FM GND
RF GND
IF GND
Dig. GND
RF GND
FM-Demod
AGC
AF-Out
Fieldstrength Indc.
MPX-In
VCO
LPF
6120 1N4148
3161 470E
3160 470E
3159 470E
3158 470E
1126
1121
GND
MPX-RDS (VCC2)
ENABLE
DATA
CLOCK
STEREO
STEREO = LOW
2145 220p
2147 220p
2148 22n
0V = No communication
During communication
High = During communication
mono stereo
1124
LEFT
GND
RIGHT
VCC +12V
2135 220n
3152 470E
2134 15n
2133 1µ
2137 220n
3153 470E
2136 15n
2138 2µ2
11,8V
11,2V
3150 4k7
3151 68k
2162 22µ
7110 BC858B
3164 4E7
3167 220E
VCC1 +8V
2130 22n
3154 150E
VDD
3155 330E
2144 1µ
VCC2 +9,6V
2142 100n
2143 220n
6107 BZX79/C11
3146 47E
1103
AM-FRAME SOCKET
6106 1N4148
3120 0E
2139 100n
3184 0E
2129 1µ
2151 15p
2152 82p
5107 Toko 7KM
3183 0E
2128 10µ
3185 0E
2141 100n
3162 150k
2160 12p
2161 1n
5121 75 kHz
2127 220n
3141 56k
3142 100k
3145 2k2
2132 470n
2131 470n
VCO
75 kHz
5115
ANTI BIRDY FILTER
+8V VCC1
7103 BC858C
3186 1k
3143 22k
3144 1k
1.3V
5102
MW
LW = 0,7V MW = 0V
3108 2k2
7104 BC338-40
2106 5p2-30p
6105a HN1V02H
6105b HN1V02H
3123 0E
2107 470n
3132 0E
3124 0E
MW-OSC
5123
2120 33p
2125 560p
3134 22k
LW-OSC
5122
2123 390p
2122 3n9
3163 0E
3129 0E
3130 0E
7105 BC338-40
3109 2k2
2108 82p
2109 22p
5103
LW
LW = 0V MW = 0,7V
7124 BC848C
3169 0E
3137 10k
7122 BC848C
LW = 0,7V MW = 0V
3128 2k2
3177 22k
3131 0E
7109 BC858B
3197 4k7
3125 10k
2158 100n
MW LW
3188 0E
3178 0E
3147 0E
LEU0150
ITC/9 851-9813

....V FM mode stereo

....V FM

....V AM

Signal path

FM

AM

AF

Δ only in RDS version (04121)

O not in RDS version (04341)

3104 217 04120 bl. 130 - 01
3104 217 04121/04341 bl. 130 - 01

## ELECTRICAL PARTSLIST - TUNER 95 BOARD

### MISCELLANEOUS

| | | |
|---|---|---|
| 1102 | 4822 267 10283 | YKD31-0432 |
| 1103 | 4822 265 31184 | S2B-XH-A-BK |
| 1110 | 4822 210 10739 | FE415-G23 |

### CAPACITORS

| | | |
|---|---|---|
| 2102 | 4822 124 80791 | 470UF20%16V |
| 2106 | 4822 125 60102 | 5P2-30P N750100V |
| 2107 | 4822 121 51252 | 470NF 5%63V |
| 2108 | 4822 126 13695 | 82PF 1% NP063V |
| 2109 | 5322 122 32658 | 22PF 5% 50V |
| 2120 | 5322 122 32659 | 33PF5%50V |
| 2122 | 5322 126 10465 | 3,9NF 10% X7R 50V 08 |
| 2123 | 4822 121 10766 | 390PF 1% 630V KP464 |
| 2125 | 4822 121 10578 | 560P1%630V |
| 2127 | 4822 122 32927 | 220NF +80-20%Y5V 50V |
| 2128 | 4822 124 41579 | 10UF 20% 50V |
| 2129 | 4822 124 40242 | 1UF20%63V |
| 2130 | 4822 126 11585 | 22NF+80-20% Y5V 25V |
| 2131 | 4822 122 33325 | 470NF 16V |
| 2132 | 4822 122 33325 | 470NF 16V |
| 2133 | 4822 124 40242 | 1UF20%63V |
| 2134 | 4822 126 13188 | 15NF 5% X7R63V |
| 2135 | 4822 122 32927 | 220NF +80-20%Y5V 50V |
| 2136 | 4822 126 13188 | 15NF 5% X7R63V |
| 2137 | 4822 122 32927 | 220NF +80-20%Y5V 50V |
| 2138 | 4822 124 41576 | 2,2UF 20% 50V |
| 2139 | 4822 126 10002 | 100NF20%Y5V 25V |
| 2140 | 4822 121 51252 | 470NF 5%63V |
| 2141 | 4822 122 31947 | 100NF20%Y5V 63V |
| 2142 | 4822 122 31947 | 100NF20%Y5V 63V |
| 2143 | 4822 122 32927 | 220NF +80-20%Y5V 50V |
| 2144 | 4822 124 40242 | 1UF20%63V |
| 2145 | 4822 122 33575 | 220PF5%NPO50V |
| 2147 | 4822 122 33575 | 220PF5%NPO50V |
| 2148 | 4822 122 33809 | 22NF20%Y5V 50V |
| 2150 | 4822 122 31947 | 100NF20%Y5V 63V |
| 2151 | 4822 126 14236 | 50V 15P 5% |
| 2152 | 4822 126 13695 | 82PF 1% NP063V |
| 2158 | 4822 122 31947 | 100NF20%Y5V 63V |
| 2160 | 4822 122 32139 | 12PF 2%NP0 63V |
| 2161 | 5322 122 34123 | 1NF10%X7R 50V |
| 2162 | 4822 124 81151 | 22UF 50V |

### RESISTORS

| | | |
|---|---|---|
| 3103 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3104 | 4822 051 10102 | 1K002% 0,25W |
| 3107 | 4822 051 20829 | 82R005%0,1W |
| 3108 | 4822 117 11449 | 2K2 1%0,1W |
| 3109 | 4822 117 11449 | 2K2 1%0,1W |
| 3110 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3111 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3120 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3123 | 4822 051 10008 | 0R005% 0,25W |
| 3124 | 4822 051 10008 | 0R005% 0,25W |
| 3125 | 4822 116 83864 | 10K5%0,5W |
| 3128 | 4822 116 52256 | 2K2 5%0,5W |
| 3129 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3130 | 4822 051 10008 | 0R005% 0,25W |
| 3131 | 4822 051 10008 | 0R005% 0,25W |
| 3132 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3134 | 4822 051 20223 | 22K005%0,1W |
| 3135 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3137 | 4822 117 10833 | 10K1%0,1W |
| 3138 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3139 | 4822 051 10008 | 0R005% 0,25W |
| 3140 | 4822 051 20331 | 330R005%0,1W |
| 3141 | 4822 117 11148 | 56K1%0,1W |
| 3142 | 4822 100 11163 | 100K30%LIN0,1W |
| 3143 | 4822 051 20223 | 22K005%0,1W |
| 3144 | 4822 051 10102 | 1K002% 0,25W |
| 3145 | 4822 117 11449 | 2K2 1%0,1W |
| 3146 | 4822 051 20479 | 47R005%0,1W |
| 3147 | 4822 051 10008 | 0R005% 0,25W |
| 3150 | 4822 051 20472 | 4K705%0,1W |
| 3151 | 4822 051 20683 | 68K005%0,1W |
| 3152 | 4822 051 20471 | 470R005%0,1W |
| 3153 | 4822 051 20471 | 470R005%0,1W |
| 3154 | 4822 116 83868 | 150R5%0,5W |
| 3155 | 4822 116 52219 | 330E5%0,5W |
| 3158 | 4822 116 83883 | 470R5%0,5W |
| 3159 | 4822 116 83883 | 470R5%0,5W |
| 3160 | 4822 116 83883 | 470R5%0,5W |
| 3161 | 4822 116 83883 | 470R5%0,5W |
| 3162 | 4822 051 20224 | 220K005%0,1W |
| 3163 | 4822 051 10008 | 0R005% 0,25W |
| 3164 | 4822 052 10478 | 4R705% 0,33W |
| 3165 | 4822 051 10008 | 0R005% 0,25W |
| 3167 | 4822 116 83872 | 220R5%0,5W |
| 3169 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3171 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3172 | 4822 051 10008 | 0R005% 0,25W |
| 3173 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3176 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3177 | 4822 051 20223 | 22K005%0,1W |

---

## ELECTRICAL PARTSLIST - TUNER 95 BOARD

### RESISTORS

| | | |
|---|---|---|
| 3178 | 4822 051 10008 | 0R005% 0,25W |
| 3181 | 4822 051 10008 | 0R005% 0,25W |
| 3183 | 4822 051 10008 | 0R005% 0,25W |
| 3184 | 4822 051 10008 | 0R005% 0,25W |
| 3185 | 4822 051 10008 | 0R005% 0,25W |
| 3186 | 4822 051 10102 | 1K002% 0,25W |
| 3188 | 4822 051 10008 | 0R005% 0,25W |
| 3192 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 3197 | 4822 051 20472 | 4K705%0,1W |

### COILS & FILTERS

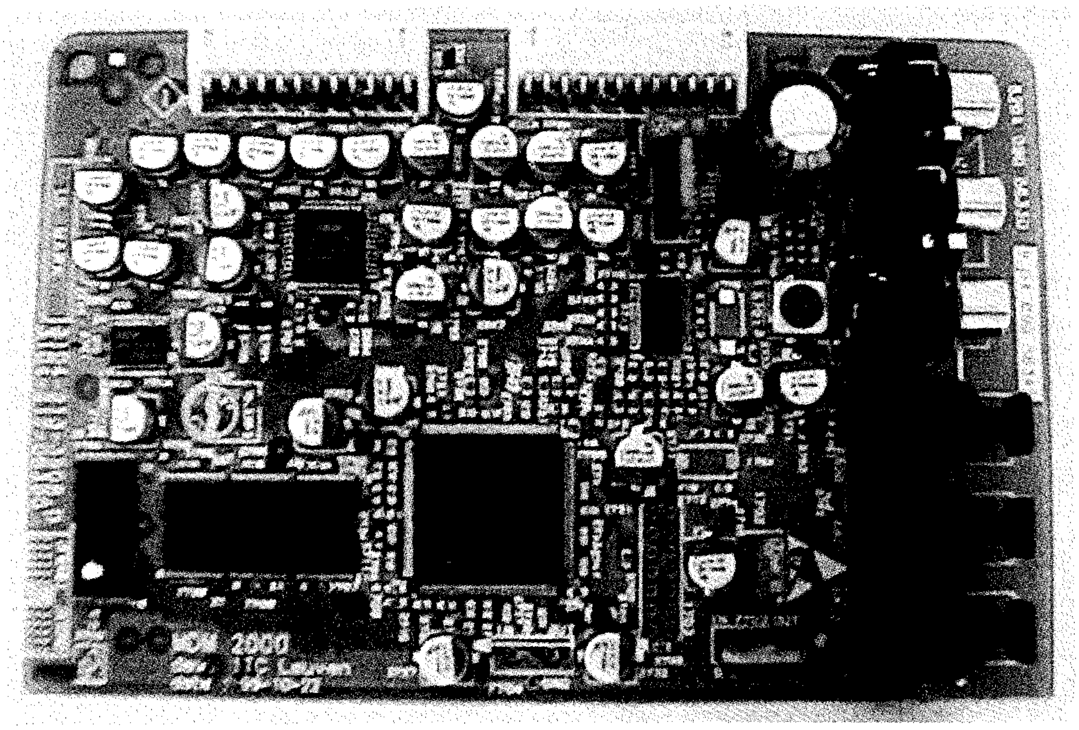
| | | |
|---|---|---|
| 5102 | 4822 157 71634 | MW AERIAL |
| 5103 | 4822 157 71635 | LW AERIAL |
| 5107 | 4822 157 11443 | 2U4 10M7 |
| 5109 | 4822 157 71639 | SFE10,7MJA10H-A-TF21 |
| 5110 | 4822 242 70665 | SFE10,7MS3-A |
| 5111 | 4822 158 60511 | AM-1F |
| 5112 | 4822 157 70302 | F7MCS-12216N |
| 5114 | 4822 157 70302 | F7MCS-12216N |
| 5115 | 4822 157 71636 | BIRDIE COIL |
| 5121 | 4822 242 10261 | T6252F00 (75KHZ) |
| 5122 | 4822 157 60517 | 110,00 UH8% |
| 5123 | 4822 157 60517 | 110,00 UH8% |

### DIODES

| | | |
|---|---|---|
| 6105 | 4822 130 83075 | HN1V02H-B |
| 6106 | 4822 130 30621 | 1N4148 |
| 6107 | 4822 130 34488 | BZX79-B11 |
| 6120 | 4822 130 30621 | 1N4148 |

### TRANSISTORS & INTERGRATED CIRCUITS

| | | |
|---|---|---|
| 7101 | 4822 209 90315 | TEA5762H/V1 |
| 7103 | 4822 130 42513 | BC858C |
| 7104 | 5322 130 44779 | BC338-40 |
| 7105 | 5322 130 44779 | BC338-40 |
| 7109 | 5322 130 41983 | BC858B |
| 7110 | 5322 130 41983 | BC858B |
| 7122 | 5322 130 42136 | BC848C |
| 7124 | 5322 130 42136 | BC848C |



# MULTI-CHANNEL DECODING MODULE

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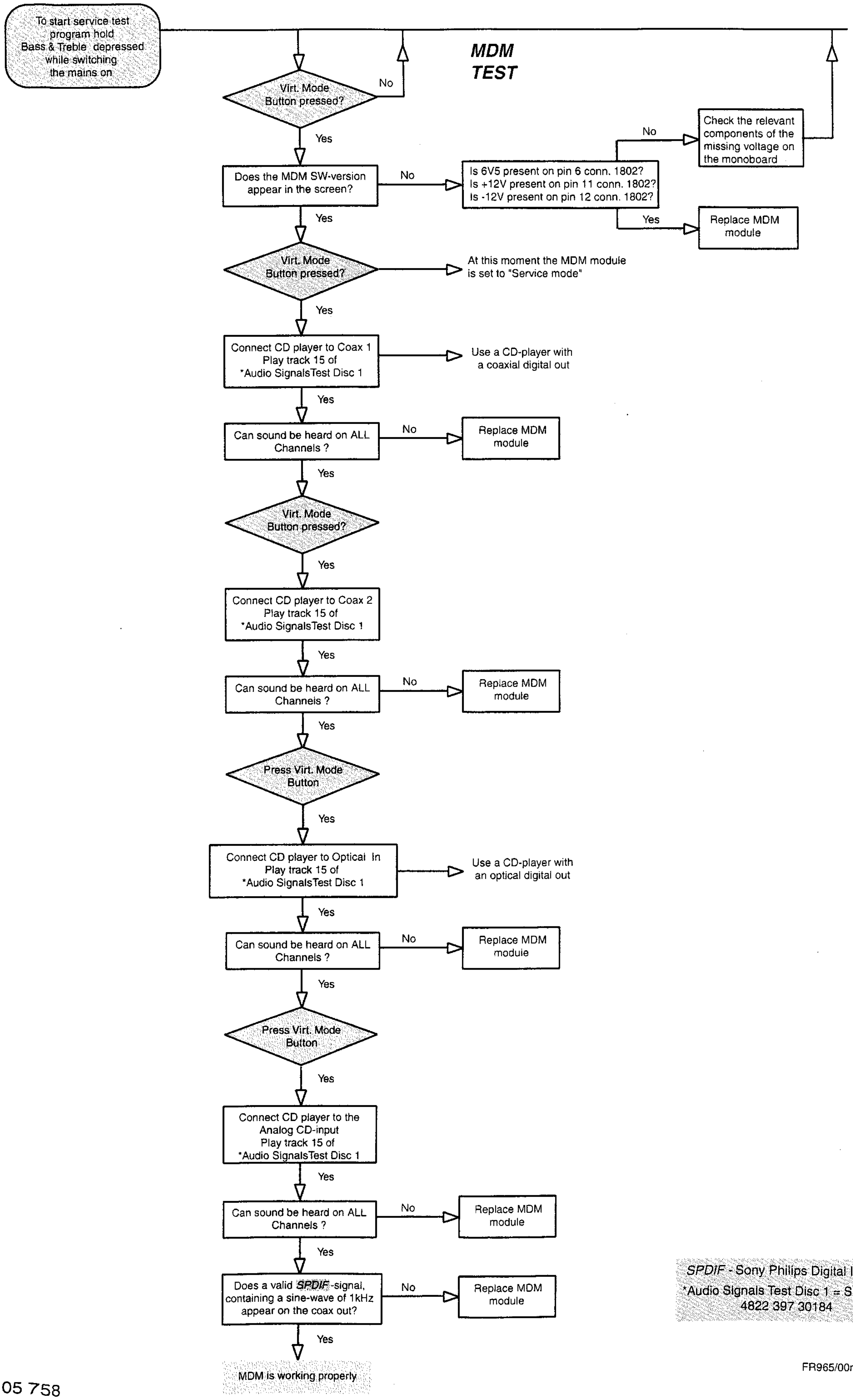
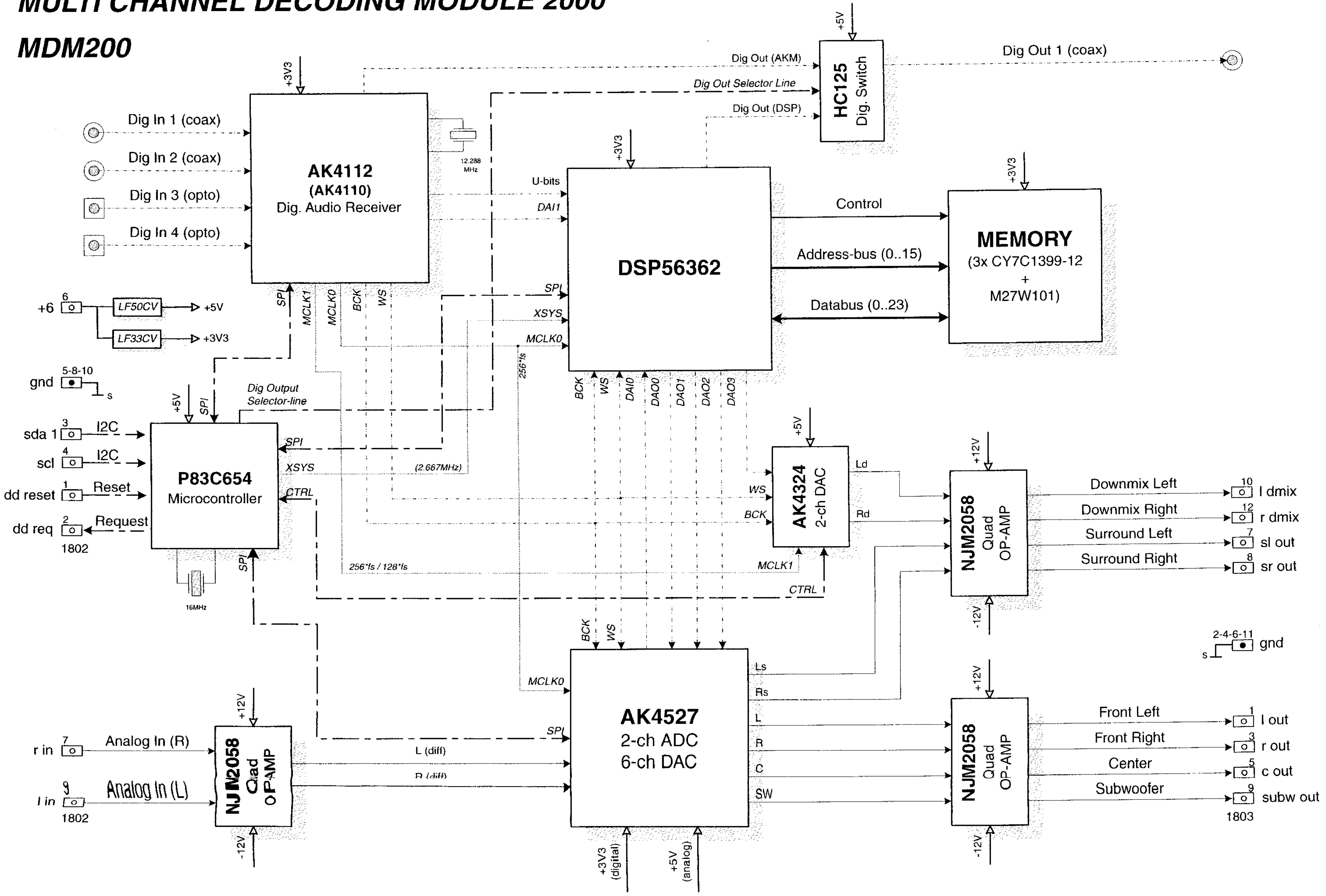
# MULTI-CHANNEL DECODING MODULE - Troubleshooting


To start service test program hold Bass & Treble depressed while switching the mains on
MDM TEST
Virt. Mode Button pressed?
No
Yes
Does the MDM SW-version appear in the screen?
No
Is 6V5 present on pin 6 conn. 1802?
Is +12V present on pin 11 conn. 1802?
Is -12V present on pin 12 conn. 1802?
No
Check the relevant components of the missing voltage on the monoboard
Yes
Replace MDM module
Yes
Virt. Mode Button pressed?
At this moment the MDM module is set to "Service mode"
Yes
Connect CD player to Coax 1 Play track 15 of *Audio SignalsTest Disc 1
Use a CD-player with a coaxial digital out
Yes
Can sound be heard on ALL Channels ?
No
Replace MDM module
Yes
Virt. Mode Button pressed?
Yes
Connect CD player to Coax 2 Play track 15 of *Audio SignalsTest Disc 1
Yes
Can sound be heard on ALL Channels ?
No
Replace MDM module
Yes
Press Virt. Mode Button
Yes
Connect CD player to Optical In Play track 15 of *Audio SignalsTest Disc 1
Use a CD-player with an optical digital out
Yes
Can sound be heard on ALL Channels ?
No
Replace MDM module
Yes
Press Virt. Mode Button
Yes
Connect CD player to the Analog CD-input Play track 15 of *Audio SignalsTest Disc 1
Yes
Can sound be heard on ALL Channels ?
No
Replace MDM module
Yes
Does a valid SPDIF-signal, containing a sine-wave of 1kHz appear on the coax out?
No
Replace MDM module
Yes
MDM is working properly

*SPDIF* - Sony Philips Digital Inter Face
*Audio Signals Test Disc 1 = SBC42
4822 397 30184

# MULTI CHANNEL DECODING MODULE 2000

## MDM200

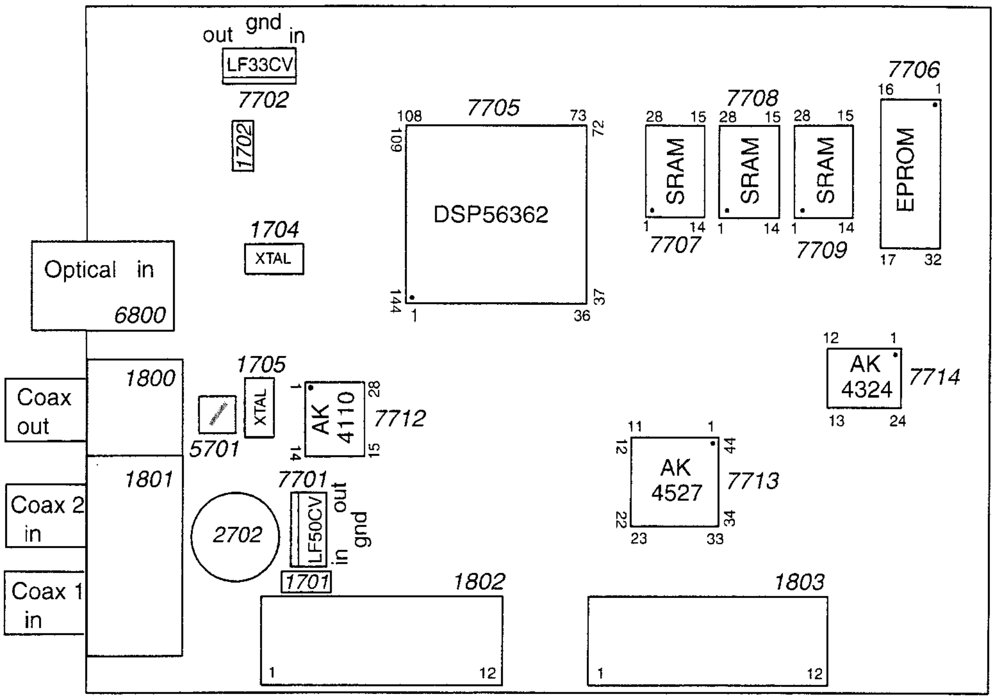

AK4112
(AK4110)
Dig. Audio Receiver
Dig In 1 (coax)
Dig In 2 (coax)
Dig In 3 (opto)
Dig In 4 (opto)
12.288 MHz
+3V3
SPI
MCLK1
MCLK0
BCK
WS
DSP56362
U-bits
DAI1
SPI
XSYS
MCLK0
256*fs
BCK
WS
DAI0
DAO0
DAO1
DAO2
DAO3
HC125
Dig. Switch
+5V
Dig Out (AKM)
Dig Out Selector Line
Dig Out (DSP)
Dig Out 1 (coax)
MEMORY
(3x CY7C1399-12
+
M27W101)
Control
Address-bus (0..15)
Databus (0..23)
+6
6
LF50CV
+5V
LF33CV
+3V3
gnd
5-8-10
s
P83C654
Microcontroller
Dig Output
Selector-line
SPI
XSYS
(2.667MHz)
CTRL
16MHz
sda 1
3
I2C
scl
4
I2C
dd reset
1
Reset
dd req
2
Request
1802
AK4324
2-ch DAC
WS
BCK
MCLK1
CTRL
Ld
Rd
256*fs / 128*fs
NJM2058
Quad
OP-AMP
+12V
-12V
Downmix Left
Downmix Right
Surround Left
Surround Right
10
l dmix
12
r dmix
7
sl out
8
sr out
2-4-6-11
gnd
s
AK4527
2-ch ADC
6-ch DAC
MCLK0
SPI
BCK
WS
Ls
Rs
L
R
C
SW
+3V3 (digital)
+5V (analog)
L (diff)
R (diff)
r in
7
Analog In (R)
l in
9
Analog In (L)
1802
Front Left
Front Right
Center
Subwoofer
1
l out
3
r out
5
c out
9
subw out
1803

### *ELECTRICAL PARTSLIST - MDM MODULE*

| | | |
|---|---|---|
| 1003 | 3104 217 06780 | MDM MODULE for FR965 |
| 1701 | 4822 252 51172 | FUSE 0,315A |
| 1702 | 4822 252 51172 | FUSE 0,315A |
| 1704 | 2422 543 01118 | CRYSTAL 16MHZ |
| 1705 | 2422 543 01132 | CRYSTAL 12MH28 |
| 1800 | 4822 267 31729 | COAX OUT CONN. |
| 1801 | 4822 267 31448 | COAX IN CONNECTOR |
| 1802 | 2422 025 10253 | CON 12P. MALE |
| 1803 | 2422 025 10253 | CON 12P. MALE |
| 2702 | 4822 123 14025 | 16V 2200U 20% |
| 6800 | 4822 218 11487 | CONN. FIBER-GLASS GP1F32R |
| 7701 | 9322 146 09687 | LF50CV |
| 7702 | 4822 209 16978 | LF33CV |

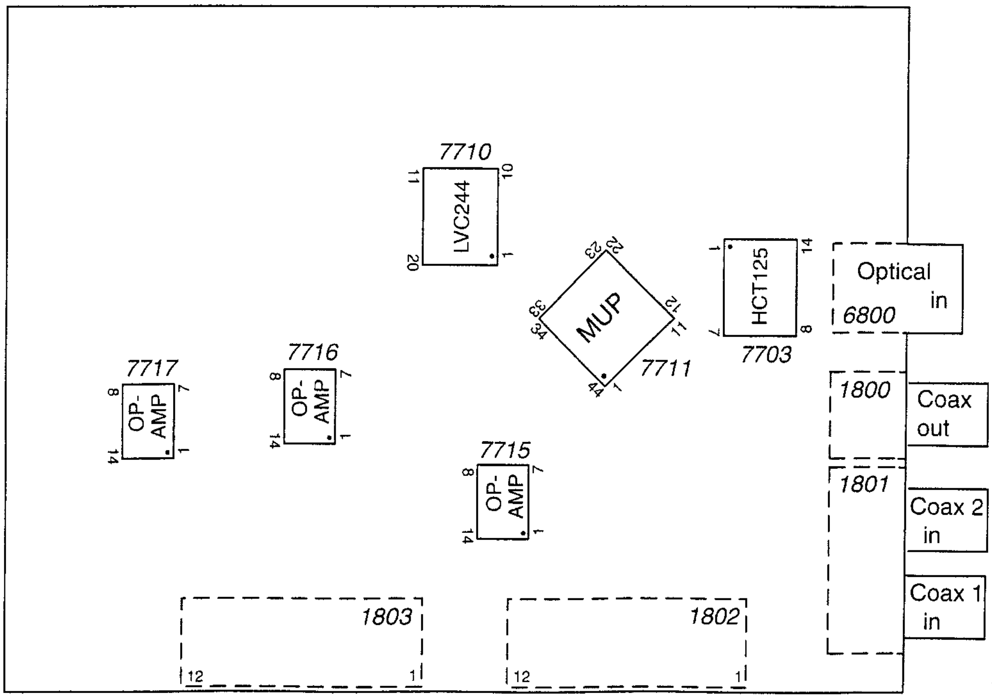
Note: Only the parts mentioned in this list are normal service parts.

Component side view

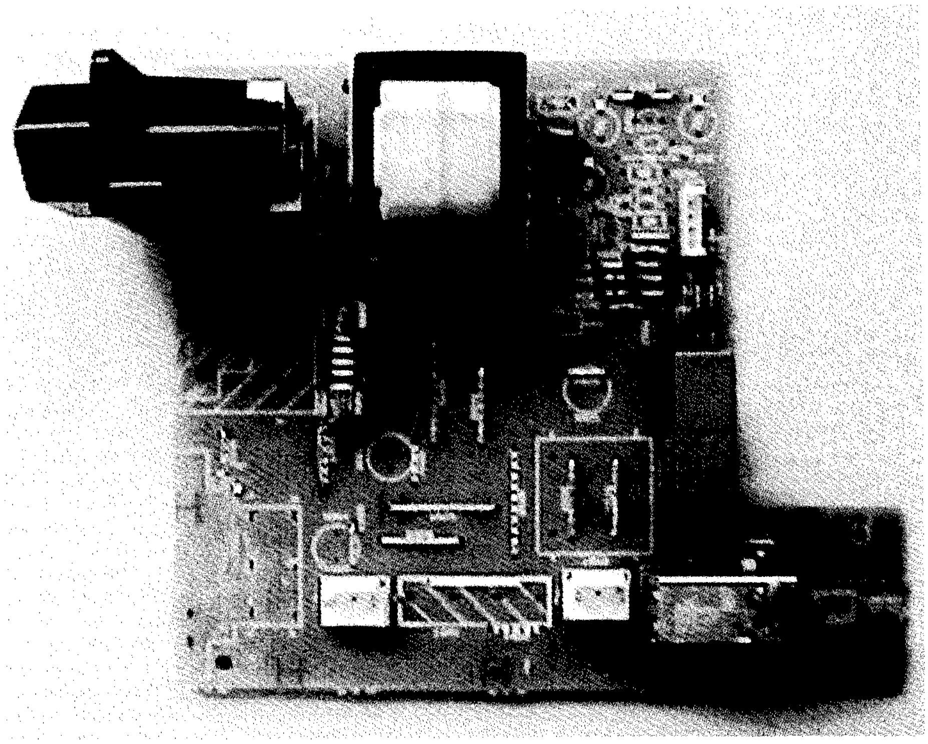


out gnd in
LF33CV
7702
1702
7705
108
73
72
109
DSP56362
144
1
36
37
7708
28 15 28 15 28 15
SRAM
SRAM
SRAM
1 14 1 14 1 14
7707
7709
7706
16 1
EPROM
17 32
1704
XTAL
Optical in
6800
Coax out
1800
Coax 2 in
1801
Coax 1 in
1705
XTAL
5701
AK 4110
7712
1
14
28
15
7701
out
gnd
in
LF50CV
2702
1701
12 1
AK 4324
7714
13 24
11 1
12
AK 4527
7713
44
22
34
23 33
1802
1 12
1803
1 12

Copper side view



7710
LVC244
11
10
20
1
MUP
22
23
33
34
11
12
44
1
7711
HCT125
1
14
7
8
7703
Optical in
6800
1800
Coax out
1801
Coax 2 in
Coax 1 in
7717
OP-AMP
8 7 14 1
7716
OP-AMP
8 7 14 1
7715
OP-AMP
8 7 14 1
1803
12 1
1802
12 1



# MAINS BOARD

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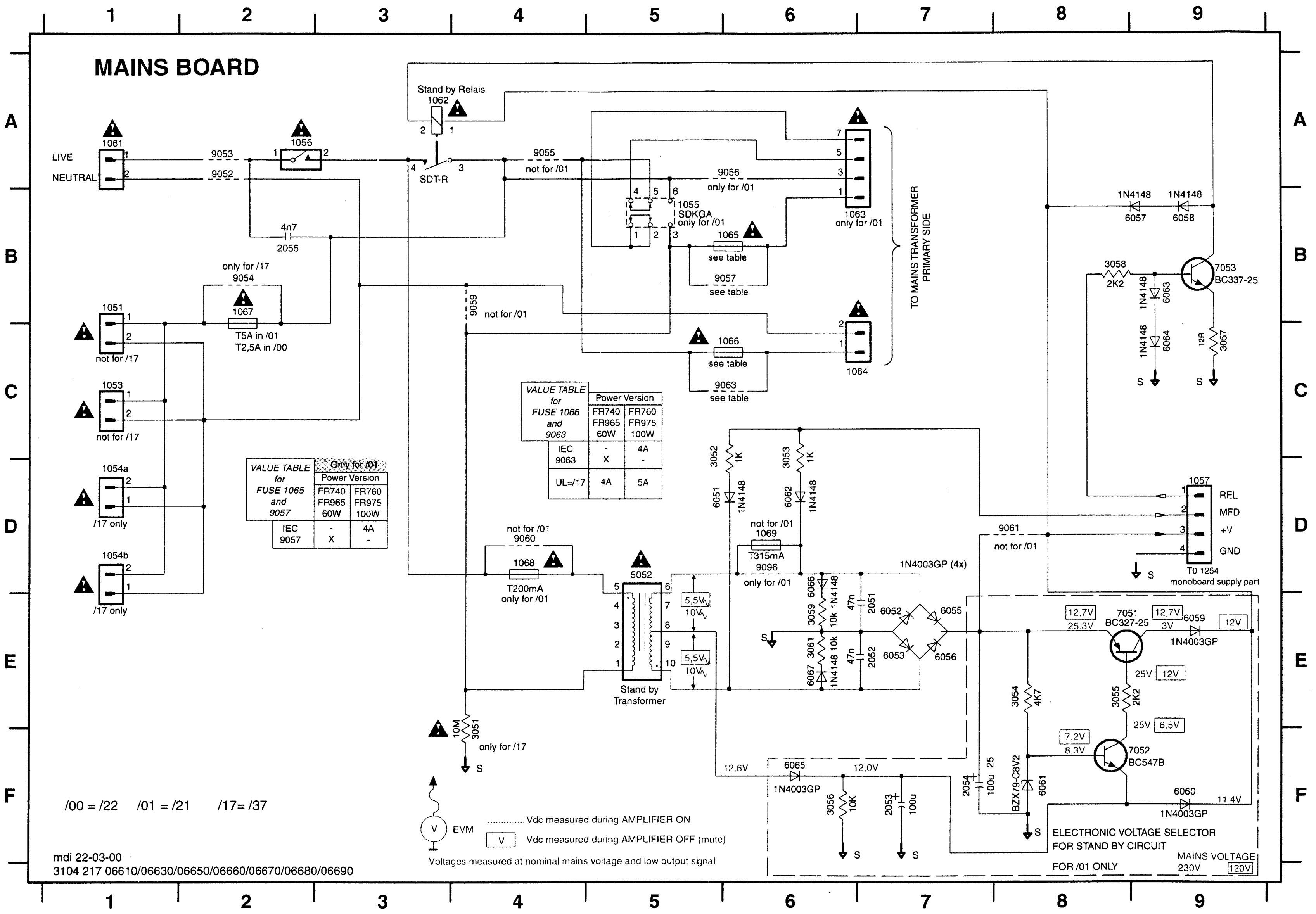
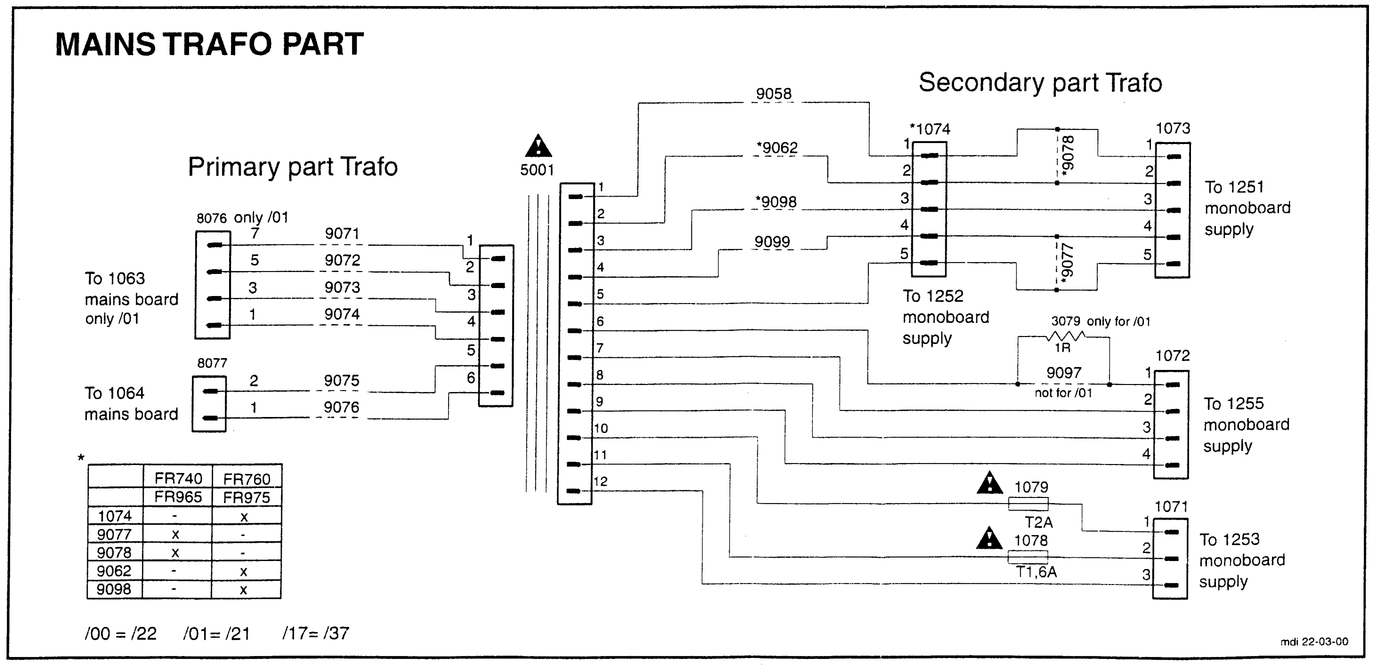
Partslist .................................................................... 9-5

# MAINS BOARD - CIRCUIT DIAGRAM


MAINS BOARD
1 2 3 4 5 6 7 8 9
A B C D E F
LIVE
NEUTRAL
1061
9053
9052
1056
Stand by Relais
1062
SDT-R
9055
not for /01
9056
only for /01
1055
SDKGA
only for /01
1065
see table
9057
see table
1063
only for /01
TO MAINS TRANSFORMER PRIMARY SIDE
4n7
2055
only for /17
9054
1067
T5A in /01
T2,5A in /00
1051
not for /17
1053
not for /17
1054a
/17 only
1054b
/17 only
9059 not for /01
1066
see table
9063
see table
1064
VALUE TABLE for FUSE 1066 and 9063
Power Version
FR740 FR965 60W
FR760 FR975 100W
IEC 9063 X 4A
UL=/17 4A 5A
VALUE TABLE for FUSE 1065 and 9057
Only for /01
Power Version
FR740 FR965 60W
FR760 FR975 100W
IEC 9057 X
not for /01
9060
1068
T200mA
only for /01
5052
Stand by Transformer
5.5V
10V
3052 1K
3053 1K
6051 1N4148
6062 1N4148
not for /01
1069
T315mA
9096
only for /01
1N4003GP (4x)
3059 10K
6066 1N4148
3061 10k
6067 1N4148
47n 2051
47n 2052
6052
6053
6055
6056
9061
not for /01
1057
REL
MFD
+V
GND
To 1254 monoboard supply part
1N4148 6057
1N4148 6058
3058 2K2
7053 BC337-25
1N4148 6063
1N4148 6064
12R 3057
12,7V 25,3V
7051 BC327-25
12,7V 3V
6059 1N4003GP
12V
3054 4K7
3055 2K2
25V 12V
25V 6.5V
7,2V 8.3V
7052 BC547B
12.6V
6065 1N4003GP
12,0V
3056 10K
2053 100u
2054 100u 25
BZX79-C8V2
6061
6060 1N4003GP
11.4V
ELECTRONIC VOLTAGE SELECTOR FOR STAND BY CIRCUIT
FOR /01 ONLY
MAINS VOLTAGE 230V 120V
10M 3051
only for /17
EVM
Vdc measured during AMPLIFIER ON
Vdc measured during AMPLIFIER OFF (mute)
Voltages measured at nominal mains voltage and low output signal
/00 = /22 /01 = /21 /17= /37
mdi 22-03-00
3104 217 06610/06630/06650/06660/06670/06680/06690

| | |
|---|---|
| 0051 | D9 |
| 1051 | B1 |
| 1052 | D1 |
| 1053 | C1 |
| 1054 | D1 |
| 1055 | B5 |
| 1056 | A2 |
| 1057 | D9 |
| 1061 | A1 |
| 1062 | A3 |
| 1063 | B6 |
| 1064 | C6 |
| 1065 | B6 |
| 1066 | C6 |
| 1067 | B2 |
| 1068 | D4 |
| 1069 | D6 |
| 2051 | E7 |
| 2052 | E7 |
| 2053 | F7 |
| 2054 | F7 |
| 2055 | B2 |
| 3051 | F4 |
| 3052 | C6 |
| 3053 | C6 |
| 3054 | E8 |
| 3055 | E8 |
| 3056 | F6 |
| 3057 | C9 |
| 3058 | B8 |
| 3059 | E6 |
| 3061 | E6 |
| 5051 | A2 |
| 5052 | D5 |
| 6051 | D6 |
| 6052 | E7 |
| 6053 | E6 |
| 6055 | E7 |
| 6056 | E7 |
| 6057 | B9 |
| 6058 | B9 |
| 6059 | E9 |
| 6060 | F9 |
| 6061 | F8 |
| 6062 | D6 |
| 6063 | B9 |
| 6064 | C9 |
| 6065 | F6 |
| 6066 | D6 |
| 6067 | E7 |
| 7051 | E8 |
| 7052 | F8 |
| 7053 | B9 |
| 9051 | A2 |
| 9052 | A2 |
| 9053 | A2 |
| 9054 | B2 |
| 9055 | A4 |
| 9056 | A6 |
| 9057 | B5 |
| 9059 | B4 |
| 9060 | D4 |
| 9061 | D8 |
| 9063 | C6 |
| 9064 | A5 |
| 9065 | B1 |
| 9066 | B1 |
| 9092 | E2 |
| 9093 | E2 |
| 9094 | F2 |
| 9095 | F2 |
| 9096 | D6 |

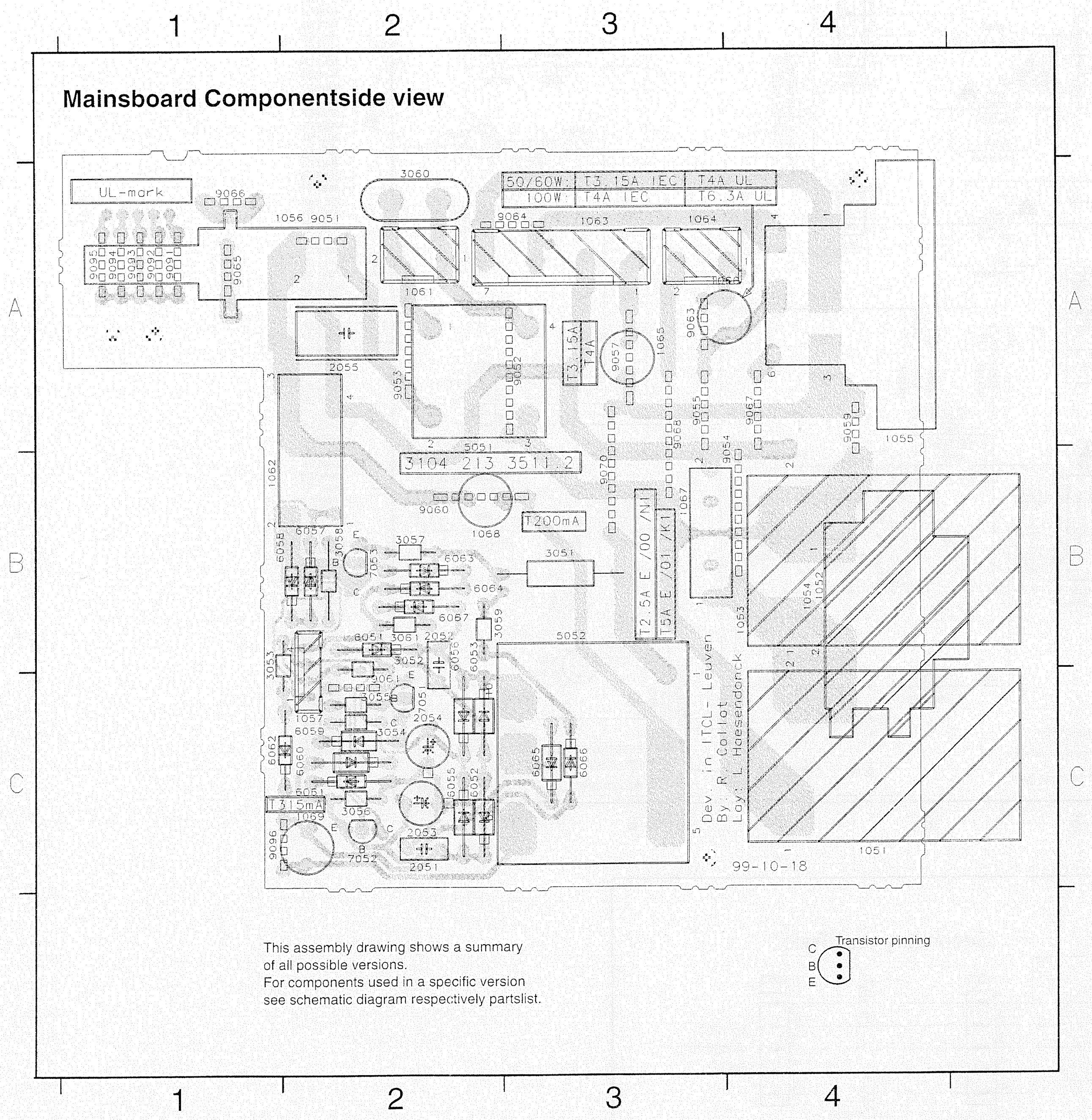

MAINS TRAFO PART
Primary part Trafo
Secondary part Trafo
To 1063 mains board only /01
8076 only /01
9071
9072
9073
9074
To 1064 mains board
8077
9075
9076
5001
9058
*9062
*9098
9099
*1074
*9078
*9077
1073
To 1251 monoboard supply
To 1252 monoboard supply
3079 only for /01
1R
9097
not for /01
1072
To 1255 monoboard supply
1079
T2A
1078
T1,6A
1071
To 1253 monoboard supply
mdi 22-03-00

*

| | FR740<br>FR965 | FR760<br>FR975 |
|---|---|---|
| 1074 | - | x |
| 9077 | x | - |
| 9078 | x | - |
| 9062 | - | x |
| 9098 | - | x |

/00 = /22 /01= /21 /17= /37

# MAINS BOARD - COMPONENTSIDE VIEW & COPPERSIDE VIEW

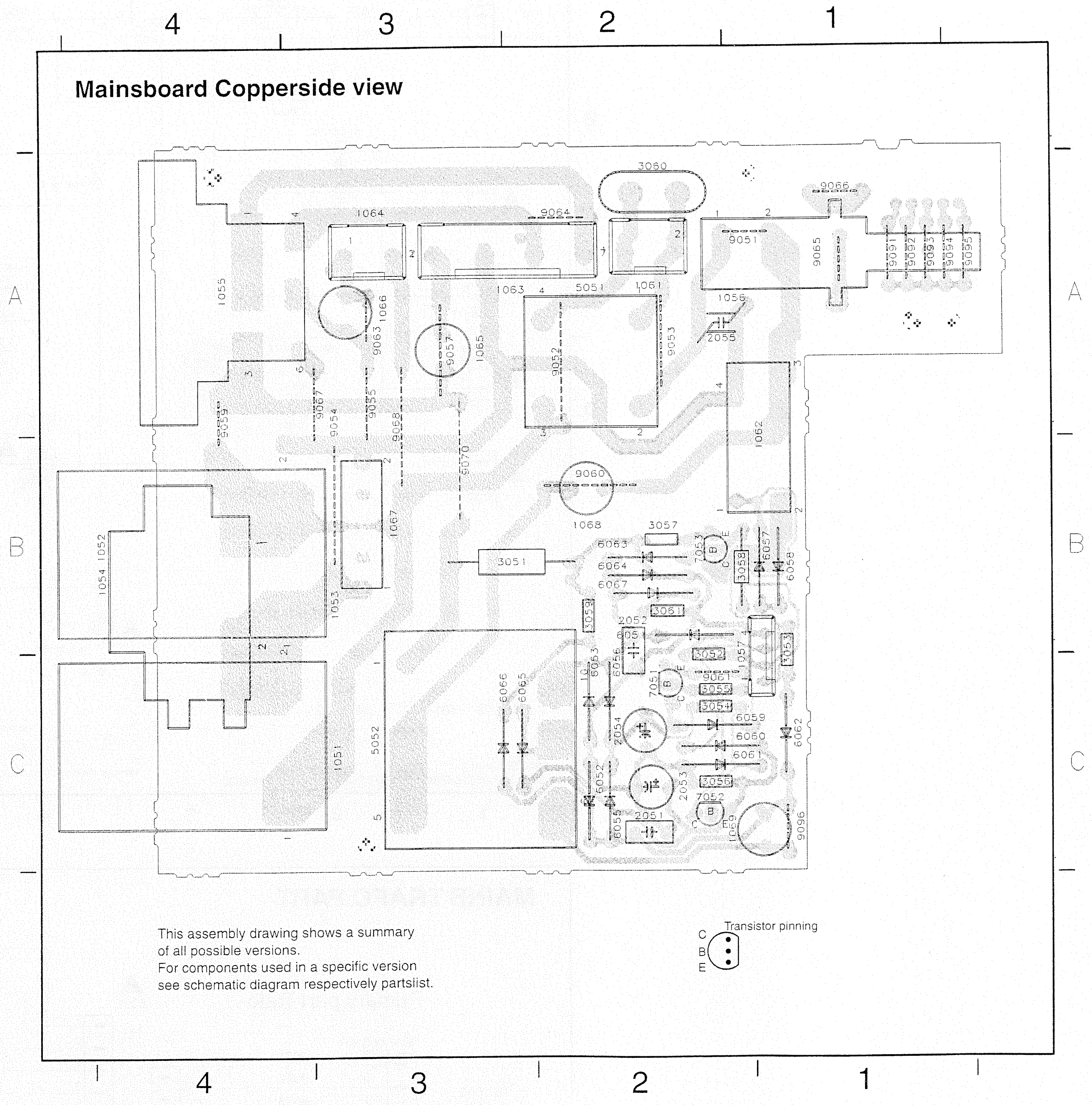

1
2
3
4
A
B
C
UL-mork
50/60W T3.15A IEC T4A UL
100W T4A IEC T6.3A UL
3104 213 3511 2
T200mA
T3.15A T4A
T2.5A E /00 /N1
T5A E /01 /K1
T315mA
Dev. in ITCL- Leuven
By: R. Colliot
Lay: L. Hoesendonck
99-10-18
C
B
E

Mainsboard Componentside view

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

Transistor pinning

| | |
|---|---|
| 1051 | C4 |
| 1052 | B4 |
| 1053 | B4 |
| 1054 | B4 |
| 1055 | A4 |
| 1056 | A2 |
| 1057 | C2 |
| 1061 | A2 |
| 1062 | A2 |
| 1063 | A3 |
| 1064 | A3 |
| 1065 | A3 |
| 1066 | A3 |
| 1057 | B3 |
| 1068 | B2 |
| 1059 | C2 |
| 2051 | C2 |
| 2052 | B2 |
| 2053 | C2 |
| 2054 | C2 |
| 2055 | A2 |
| 3051 | B3 |
| 3052 | B2 |
| 3053 | B2 |
| 3054 | C2 |
| 3055 | C2 |
| 3056 | C2 |
| 3057 | B2 |
| 3058 | B2 |
| 3059 | B2 |
| 3060 | A2 |
| 3061 | B2 |
| 5051 | A2 |
| 5052 | C3 |
| 6051 | B2 |
| 6052 | C2 |
| 6053 | C2 |
| 6055 | C2 |
| 6056 | C2 |
| 6057 | B2 |
| 6058 | B2 |
| 6059 | C2 |
| 6060 | C2 |
| 6061 | C2 |
| 6062 | C2 |
| 6063 | B2 |
| 6064 | B2 |
| 6065 | C3 |
| 6066 | C3 |
| 6067 | B2 |
| 7051 | C2 |
| 7052 | C2 |
| 7053 | B2 |
| 9051 | A2 |
| 9052 | A3 |
| 9053 | A2 |
| 9054 | B4 |
| 9055 | A3 |
| 9057 | A3 |
| 9059 | A4 |
| 9060 | B2 |
| 9061 | C2 |
| 9063 | A3 |
| 9054 | A3 |
| 9055 | A1 |
| 9066 | A1 |
| 9067 | A4 |
| 9068 | A3 |
| 9070 | B3 |
| 9091 | A1 |
| 9092 | A1 |
| 9093 | A1 |
| 9094 | A1 |
| 9095 | A1 |
| 9096 | C2 |


4
3
2
1
A
B
C
C
B
E

Mainsboard Copperside view

This assembly drawing shows a summary
of all possible versions.
For components used in a specific version
see schematic diagram respectively partslist.

Transistor pinning

## *ELECTRICAL PARTSLIST - MAINS BOARD*

### MISCELLANEOUS

| | | | |
|---|---|---|---|
| 1051 | ▲ | 4822 267 31994 | MAINS OUTLET |
| 1053 | ▲ | 4822 267 31994 | MAINS OUTLET |
| 1056 | ▲ | 4822 276 13224 | MAINS SWITCH |
| 1061 | ▲ | 4822 265 20723 | MAINS INLET |
| 1062 | | 4822 280 10391 | RELAY |
| 1064 | ▲ | 4822 265 20723 | B2P3-VH |
| 1067 | ▲ | 2422 086 10912 | FUSE 2,50A |
| 1069 | ▲ | 4822 071 53151 | FUSE 315MA |
| 1078 | ▲ | 4822 071 51602 | FUSE 1.6A |
| 1079 | ▲ | 4822 071 52002 | FUSE 2A |

### CAPACITORS

| | | | |
|---|---|---|---|
| 2051 | | 4822 121 43526 | 47NF 5% 250V |
| 2052 | | 4822 121 43526 | 47NF 5% 250V |
| 2055 | ▲ | 4822 126 14084 | 4,7NF 20% 250V |

### RESISTORS

| | | |
|---|---|---|
| 3052 | 4822 050 11002 | 1K00 1% 0,4W |
| 3053 | 4822 050 11002 | 1K00 1% 0,4W |
| 3057 | 4822 052 10129 | 12R00 5% 0,33W |
| 3058 | 4822 116 52256 | 2K2 5% 0,5W |
| 3059 | 4822 050 21003 | 10K00 1% 0,6W |
| 3061 | 4822 050 21003 | 10K00 1% 0,6W |

### TRAFO

| | | | |
|---|---|---|---|
| 5052 | ▲ | 4822 146 11143 | STBY TRAFO |

### DIODES

| | | |
|---|---|---|
| 6051 | 4822 130 30621 | 1N4148 |
| 6052 | 4822 130 31878 | 1N4003G |
| 6053 | 4822 130 31878 | 1N4003G |
| 6055 | 4822 130 31878 | 1N4003G |
| 6056 | 4822 130 31878 | 1N4003G |
| 6057 | 4822 130 30621 | 1N4148 |
| 6058 | 4822 130 30621 | 1N4148 |
| 6062 | 4822 130 30621 | 1N4148 |
| 6063 | 4822 130 30621 | 1N4148 |
| 6064 | 4822 130 30621 | 1N4148 |
| 6066 | 4822 130 30621 | 1N4148 |
| 6067 | 4822 130 30621 | 1N4148 |

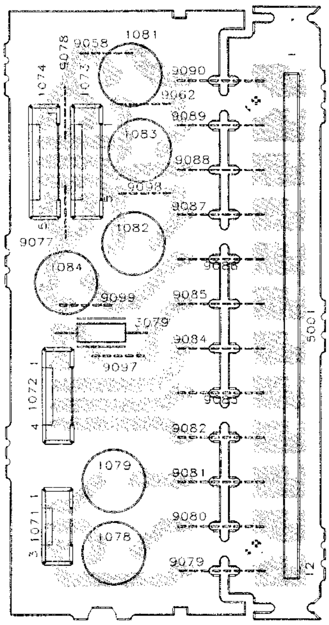
### TRANSISTORS

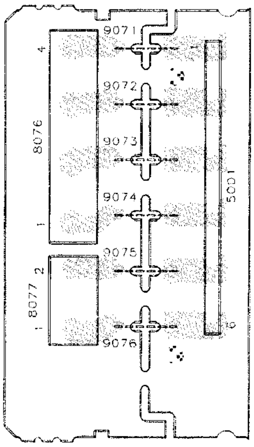
| | | |
|---|---|---|
| 7053 | 4822 130 40981 | BC337-25 |

## TRAFO BOARD

### Copperside view

Interconnection Board
Transformer secondary

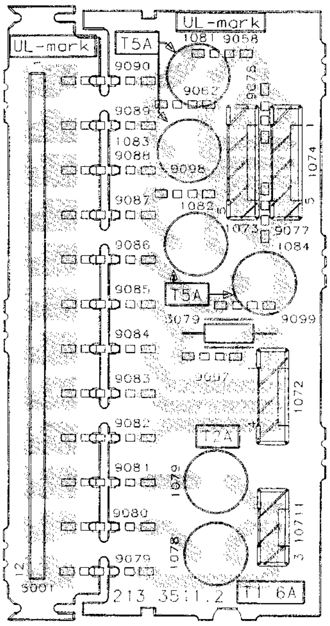

9078
9058
1081
1074
1073
9090
9062
9089
1083
9088
9098
9087
1082
9077
1084
9099
9085
3079
9084
9097
1072
9083
9082
1079
9081
1071
9080
1078
9079
5001
12

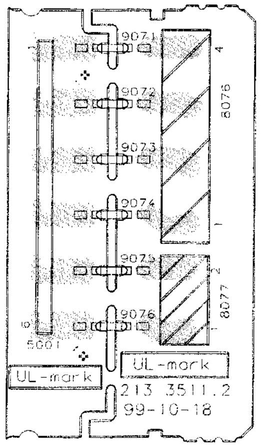

9071
9072
9073
9074
9075
9076
8076
8077
5001

Interconnection Board
Transformer primary

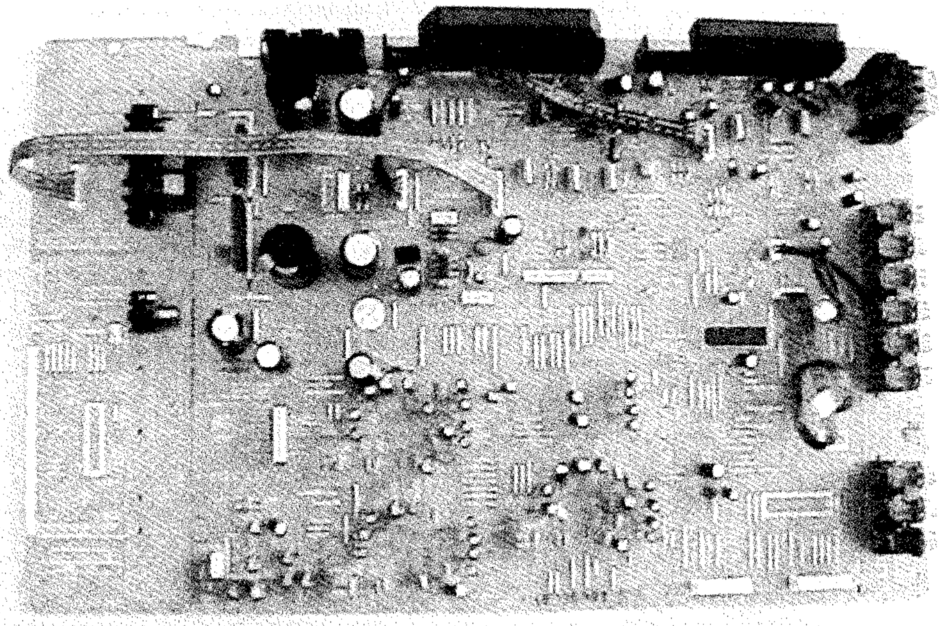
### Componentside view

Interconnection Board
Transformer secondary


UL-mark
UL-mark
T5A
1081
9058
9090
9062
9078
9089
1083
9088
9098
9087
1082
1074
1073
9077
9086
1084
9085
T5A
3079
9099
9084
9097
9083
1072
9082
T2A
9081
1079
9080
1071
1078
9079
5001
12
213 3511.2
T1 6A


9071
9072
9073
9074
9075
9076
8076
8077
5001
UL-mark
UL-mark
213 3511.2
99-10-18

Interconnection Board
Transformer primary



# MONO2 BOARD

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# MEASUREMENT REFERENCES TO LAYOUT ON PAGE 10-8

## IC7643

| IC 7643 Pin | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| 17 | TP 47 | MDM Surround L in |
| 18 | TP 48 | 6 CH Surround L in |
| 9 | TP 50 | MDM Surround R in |
| 10 | TP 51 | 6 CH Surround R in |
| 3 | TP 52 | 4,7V |
| 2 | TP 53 | 4,7V |
| 4 | TP 54 | 4,7V |
| 26 | TP 55 | 4,7V |
| 27 | TP 56 | 4,7V |
| 33 | TP 57 | Surround Right out |
| 36/40/43 | TP 58 | Ground |
| 41/42 | TP 59 | 9,4V |
| 39 | TP 60 | 4,7V |
| 19 | TP 61 | 8,7V |
| 34 | TP 63 | Surround Left out |
| 25 | TP 64 | 4,7V |
| 24 | TP 65 | 4,7V |
| 12 | TP 66 | 4,7V |
| 20 | TP 67 | 4,7V |
| 21 | TP 68 | 4,7V |

## IC7504

| IC 7504 Pin | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| 5 via R3614 | TP 77 | Rec - in Right |
| 4 | TP 78 | -13,5V |
| 7 via R3616 | TP 79 | Rec - out Right |
| 8 | TP 80 | 12V |
| 3 via R3613 | TP 81 | Rec - in Left |
| 1 via R3615 | TP 82 | Rec - out Left |

## MEASUREMENT REFERENCES TO LAYOUT ON PAGE 10-8

### IC7641

| IC 7641 Pin | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| 16 | TP 1 | Left in |
| 17 | TP 2 | MDM Left in |
| 18 | TP 3 | 6 CH Front left in |
| 8 | TP 4 | Right in |
| 9 | TP 5 | MDM Right in |
| 10 | TP 6 | 6 CH Front Right in |
| 3 | TP 7 | 4,7V |
| 2 | TP 8 | 4,7V |
| 4 | TP 9 | 4,7V |
| 26 | TP 10 | 4,7V |
| 27 | TP 11 | 4,7V |
| 33 | TP 12 | Right out |
| 36/40/43 | TP 13 | Ground |
| 41/42 | TP 14 | 9,4V |
| 39 | TP 15 | 4,7V |
| 19 | TP 16 | 8,7V |
| 34 | TP 18 | Left out |
| 25 | TP 19 | 4,7V |
| 24 | TP 20 | 4,7V |
| 12 | TP 21 | 4,7V |
| 20 | TP 22 | 4,7V |
| 21 | TP 23 | 4,7V |

### IC7642

| IC 7642 Pin | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| 16 | TP 24 | 4,7V |
| 17 | TP 25 | MDM Center in |
| 18 | TP 26 | 6 CH Center in |
| 8 | TP 27 | MDM Subwoofer in |
| 9 | TP 28 | MDM Subwoofer in |
| 10 | TP 29 | 6 CH Subwoofer in |
| 3 | TP 30 | 4,7V |
| 2 | TP 31 | 4,7V |
| 4 | TP 32 | 4,7V |
| 26 | TP 33 | 4,7V |
| 27 | TP 34 | 4,7V |
| 33 | TP 35 | Subwoofer out |
| 36/43 | TP 36 | Ground |
| 40/41/42 | TP 37 | 9,4V |
| 39 | TP 38 | 4,7V |
| 19 | TP 39 | 8,7V |
| 34 | TP 40 | Center out |
| 25 | TP 41 | 4,7V |
| 24 | TP 42 | 4,7V |
| 12 | TP 43 | 4,7V |
| 20 | TP 44 | 4,7V |
| 21 | TP 45 | 4,7V |

### IC7601

| IC 7601 Pin | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| 5 | TP 69 | Headphone Amp L in |
| 4 | TP 70 | -13,5V |
| 8 | TP 71 | 12V |
| 3 | TP 72 | Headphone Amp R in |

### Tr 7622

| Tr7622 | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| B | TP 99 | -0,5V |
| C | TP 100 | Ground |
| E | TP 101 | Headphone Amp R out |

### IC7503

| IC 7503 Pin | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| 5 | TP 73 | Right in |
| 4 | TP 74 | -12V |
| 8 | TP 75 | 11V |
| 3 | TP 76 | Left in |

### Tr 7653

| Tr7653 | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| B | TP 86 | -1,8V |
| E | TP 88 | Center mute |

### Tr 7621

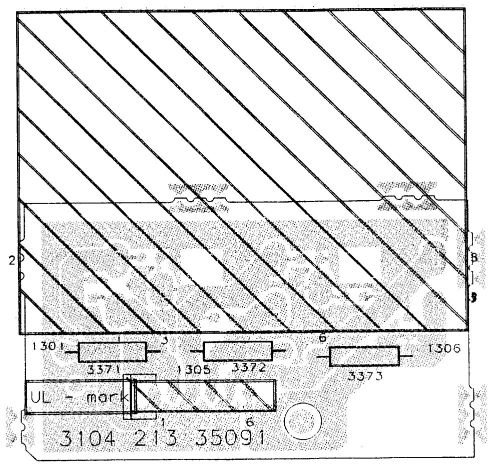
| Tr7621 | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| B | TP 96 | -1,5V |
| C | TP 97 | Ground |
| E | TP 98 | Headphone Amp L out |

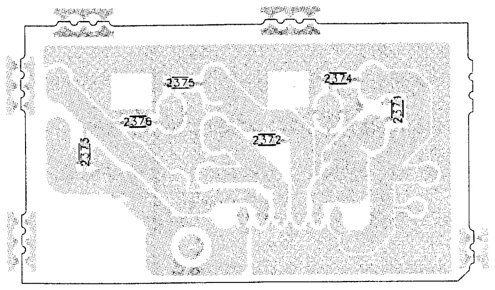
### Tr 7658

| Tr7658 | Can be measure via Test point on component side monoboard | Funtionality |
|---|---|---|
| B | TP 83 | 5V |
| C | TP 84 | -13V |
| E | TP 85 | 5V |

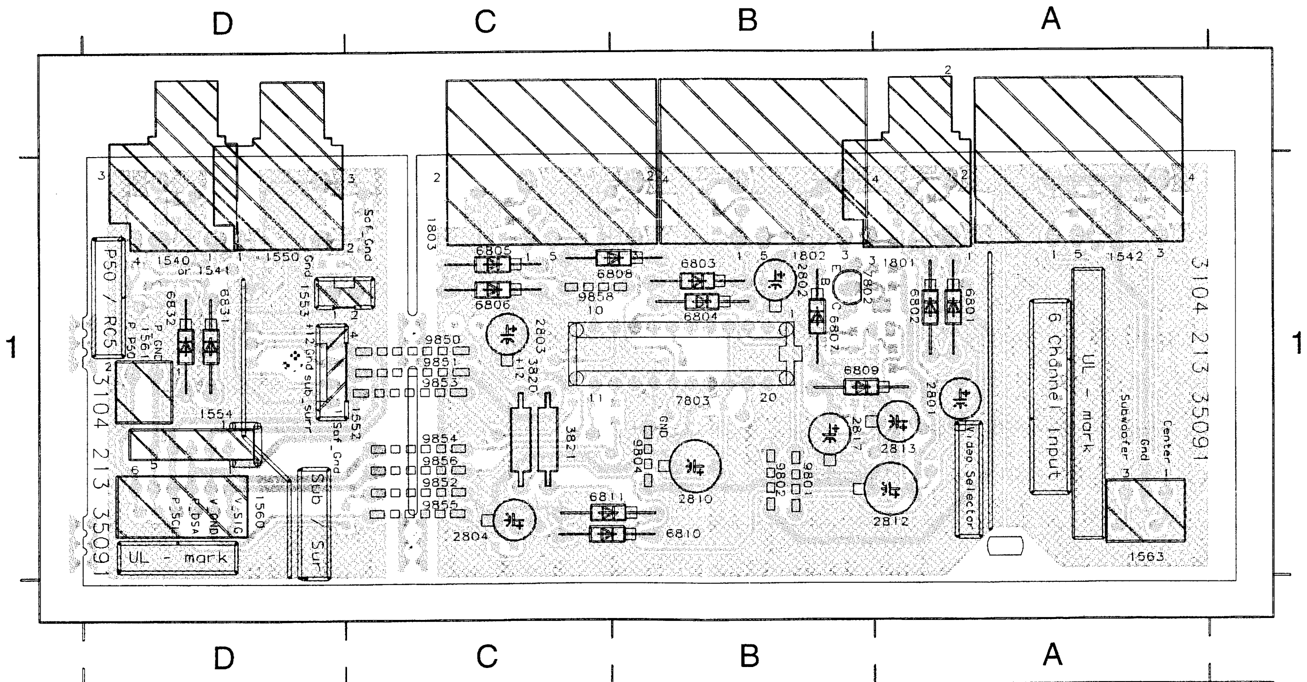
---

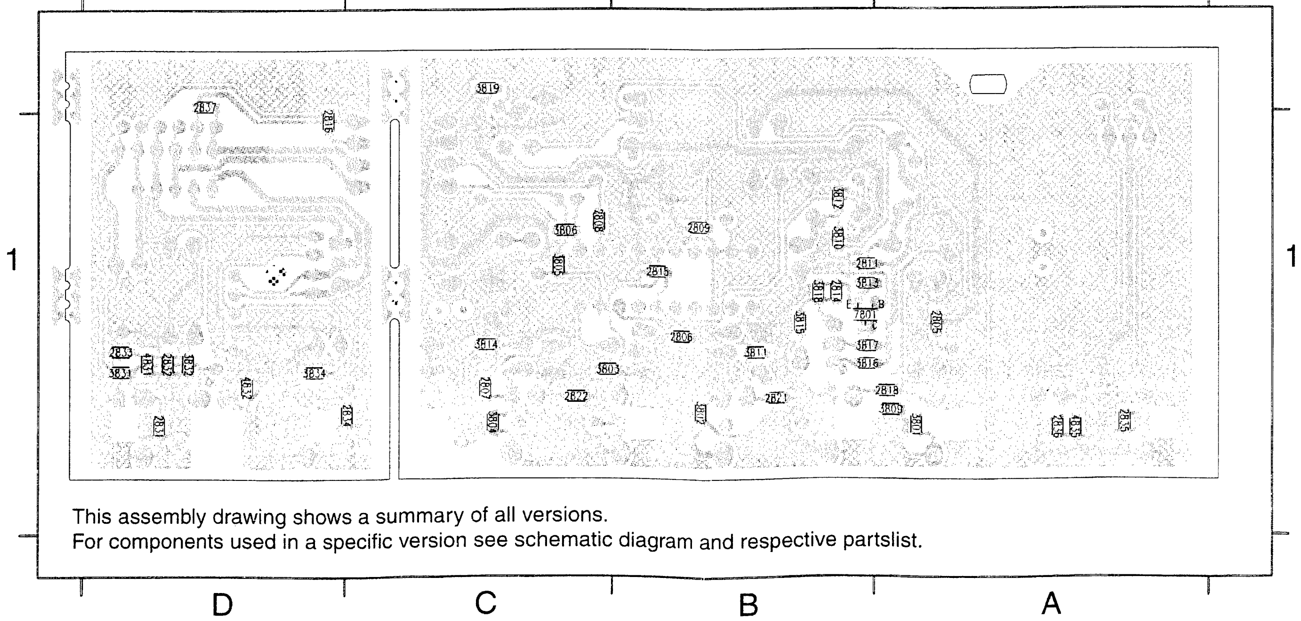
## SCREW TERMINAL BOARD - COMPONENT VIEW & COPPER SIDE VIEW





## P50/RC5 VIDEO SELECTOR BOARD - COMPONENT VIEW & COPPER SIDE VIEW



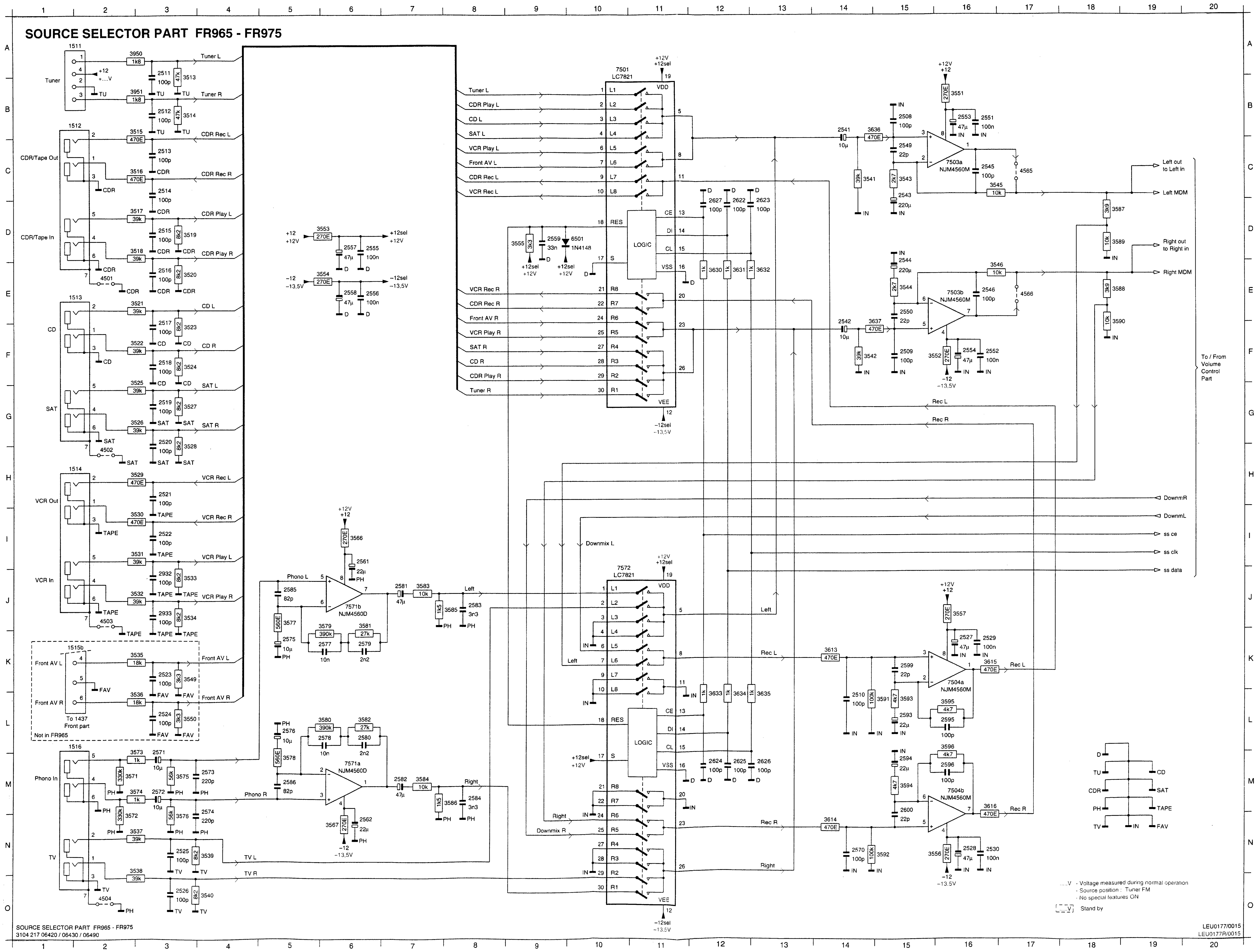


This assembly drawing shows a summary of all versions.
For components used in a specific version see schematic diagram and respective partslist.

| | |
|---|---|
| 1540 | D1 |
| 1541 | D1 |
| 1542 | A1 |
| 1550 | D1 |
| 1552 | D1 |
| 1553 | D1 |
| 1554 | D1 |
| 1560 | D1 |
| 1561 | D1 |
| 1563 | A1 |
| 1801 | A1 |
| 1802 | B1 |
| 1803 | C1 |
| 2801 | A1 |
| 2802 | B1 |
| 2803 | C1 |
| 2804 | C1 |
| 2810 | B1 |
| 2812 | A1 |
| 2813 | A1 |
| 2817 | B1 |
| 3820 | C1 |
| 3821 | C1 |
| 6801 | A1 |
| 6802 | A1 |
| 6803 | B1 |
| 6804 | B1 |
| 6805 | C1 |
| 6806 | C1 |
| 6807 | B1 |
| 6808 | B1 |
| 6809 | B1 |
| 6810 | C1 |
| 6811 | C1 |
| 6831 | D1 |
| 6832 | D1 |
| 7802 | B1 |
| 7803 | B1 |
| 9801 | B1 |
| 9802 | B1 |
| 9804 | B1 |
| 9850 | C1 |
| 9851 | C1 |
| 9852 | C1 |
| 9853 | C1 |
| 9854 | C1 |
| 9855 | C1 |
| 9856 | C1 |
| 9858 | C1 |

| | |
|---|---|
| 2805 | A1 |
| 2806 | B1 |
| 2807 | C1 |
| 2808 | B1 |
| 2809 | B1 |
| 2811 | A1 |
| 2814 | B1 |
| 2815 | B1 |
| 2816 | C1 |
| 2818 | A1 |
| 2821 | B1 |
| 2822 | C1 |
| 2831 | D1 |
| 2832 | D1 |
| 2833 | D1 |
| 2834 | C1 |
| 2835 | A1 |
| 2836 | A1 |
| 2837 | D1 |
| 3801 | A1 |
| 3802 | B1 |
| 3803 | B1 |
| 3804 | C1 |
| 3805 | C1 |
| 3806 | C1 |
| 3809 | A1 |
| 3810 | B1 |
| 3811 | B1 |
| 3812 | B1 |
| 3813 | A1 |
| 3814 | C1 |
| 3815 | B1 |
| 3816 | A1 |
| 3817 | A1 |
| 3818 | B1 |
| 3819 | C1 |
| 3831 | D1 |
| 3832 | D1 |
| 3834 | D1 |
| 4831 | D1 |
| 4832 | D1 |
| 4835 | A1 |
| 7801 | A1 |

## SOURCE SELECTOR PART FR965 - FR975

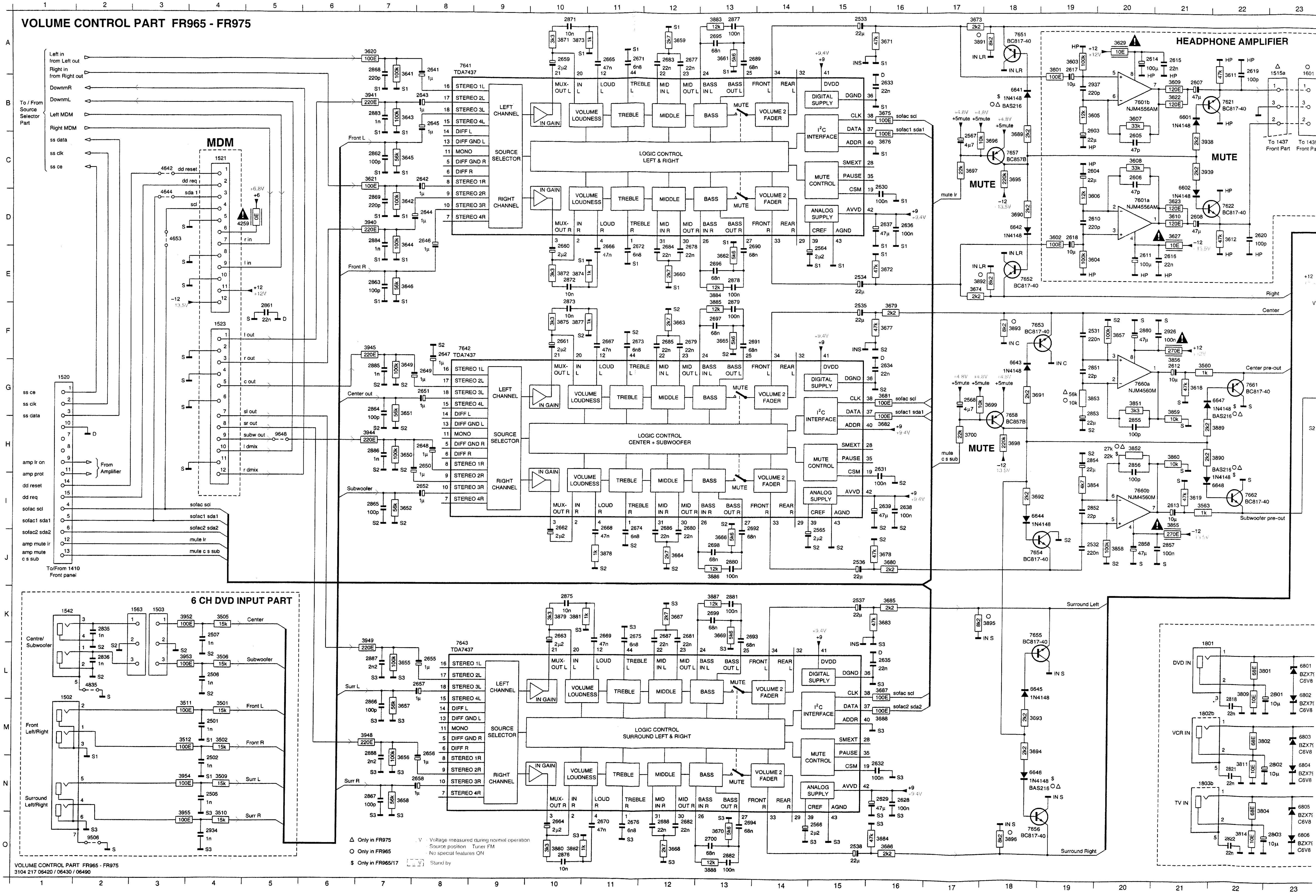

1511
Tuner
Tuner L
Tuner R
1512
CDR/Tape Out
CDR Rec L
CDR Rec R
CDR/Tape In
CDR Play L
CDR Play R
1513
CD
CD L
CD R
SAT
SAT L
SAT R
1514
VCR Out
VCR Rec L
VCR Rec R
VCR In
VCR Play L
VCR Play R
1515b
Front AV L
Front AV R
To 1437 Front part
Not in FR965
1516
Phono In
TV
TV L
TV R
7501 LC7821
7572 LC7821
LOGIC
VDD
VEE
RES
CE
DI
CL
VSS
7503a NJM4560M
7503b NJM4560M
7504a NJM4560M
7504b NJM4560M
7571a NJM4560D
7571b NJM4560D
6501 1N4148
Phono L
Phono R
Left
Right
Downmix L
Downmix R
Rec L
Rec R
Left out to Left in
Left MDM
Right out to Right in
Right MDM
To / From Volume Control Part
DownmR
DownmL
ss ce
ss clk
ss data
+12V
+12sel
-12sel
-13,5V
TU
CDR
CD
SAT
PH
TV
IN
FAV
TAPE
D

....V - Voltage measured during normal operation
- Source position : Tuner FM
- No special features ON

....V Stand by

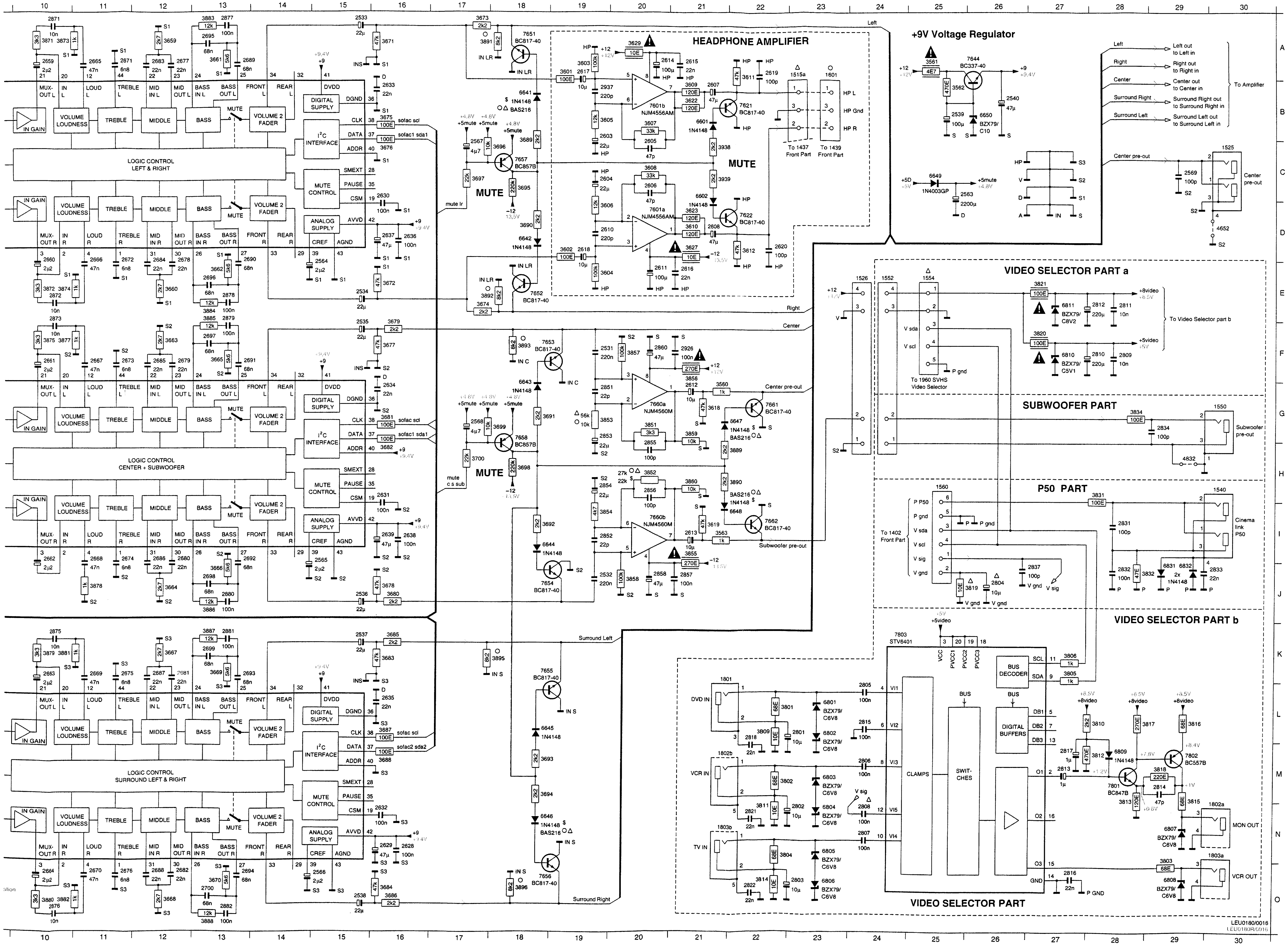
|  |  |
|---|---|
| 1511 | A1 |
| 1512 | B1 |
| 1513 | E1 |
| 1514 | H1 |
| 1515b | K1 |
| 1516 | L1 |
| 2508 | B15 |
| 2509 | F15 |
| 2510 | L14 |
| 2511 | A3 |
| 2512 | B3 |
| 2513 | C3 |
| 2514 | C3 |
| 2515 | D3 |
| 2516 | E3 |
| 2517 | F3 |
| 2518 | F3 |
| 2519 | G3 |
| 2520 | G3 |
| 2521 | H3 |
| 2522 | I3 |
| 2523 | K3 |
| 2524 | L3 |
| 2525 | N3 |
| 2526 | O3 |
| 2527 | K16 |
| 2528 | N16 |
| 2529 | K16 |
| 2530 | N16 |
| 2541 | B14 |
| 2542 | F14 |
| 2543 | C15 |
| 2544 | E15 |
| 2545 | C16 |
| 2546 | E16 |
| 2549 | C15 |
| 2550 | E15 |
| 2551 | B16 |
| 2552 | F16 |
| 2553 | B16 |
| 2554 | F16 |
| 2555 | D6 |
| 2556 | E6 |
| 2557 | D6 |
| 2558 | E6 |
| 2559 | D9 |
| 2561 | I6 |
| 2562 | N6 |
| 2570 | N14 |
| 2571 | M3 |
| 2572 | M3 |
| 2573 | M4 |
| 2574 | M4 |
| 2575 | K5 |
| 2576 | L5 |
| 2577 | K5 |
| 2578 | L5 |
| 2579 | K6 |
| 2580 | L6 |
| 2581 | J7 |
| 2582 | M7 |
| 2583 | J8 |
| 2584 | M8 |
| 2585 | J5 |
| 2586 | M5 |
| 2593 | L15 |
| 2594 | M15 |
| 2595 | L16 |
| 2596 | M16 |
| 2599 | K15 |
| 2600 | M15 |
| 2622 | D12 |
| 2623 | D13 |
| 2624 | M12 |
| 2625 | M12 |
| 2626 | M13 |
| 2627 | D12 |
| 2932 | J3 |
| 2933 | J3 |
| 3513 | B3 |
| 3514 | B3 |
| 3515 | B2 |
| 3516 | C2 |
| 3517 | D2 |
| 3518 | D2 |
| 3519 | D3 |
| 3520 | E3 |
| 3521 | E2 |
| 3522 | F2 |
| 3523 | F3 |
| 3524 | F3 |
| 3525 | F2 |
| 3526 | G2 |
| 3527 | G3 |
| 3528 | H3 |
| 3529 | H2 |
| 3530 | I2 |
| 3531 | I2 |
| 3532 | J2 |
| 3533 | J3 |
| 3534 | J3 |
| 3535 | K2 |
| 3536 | L2 |
| 3537 | N2 |
| 3538 | N2 |
| 3539 | N4 |
| 3540 | O4 |
| 3541 | C14 |
| 3542 | F14 |
| 3543 | C15 |
| 3544 | E15 |
| 3545 | C16 |
| 3546 | E16 |
| 3549 | K3 |
| 3550 | L3 |
| 3551 | B16 |
| 3552 | F15 |
| 3553 | D5 |
| 3554 | E5 |
| 3555 | D9 |
| 3556 | N15 |
| 3557 | J16 |
| 3566 | I6 |
| 3567 | N6 |
| 3571 | M2 |
| 3572 | N2 |
| 3573 | M2 |
| 3574 | M2 |
| 3575 | M3 |
| 3576 | N3 |
| 3577 | J5 |
| 3578 | M5 |
| 3579 | J5 |
| 3580 | L5 |
| 3581 | J6 |
| 3582 | L6 |
| 3583 | J7 |
| 3584 | M7 |
| 3585 | J8 |
| 3586 | M8 |
| 3587 | D18 |
| 3588 | E18 |
| 3589 | D18 |
| 3590 | F18 |
| 3591 | L15 |
| 3592 | N15 |
| 3593 | L15 |
| 3594 | M15 |
| 3595 | L16 |
| 3596 | L16 |
| 3613 | K14 |
| 3614 | N14 |
| 3615 | K16 |
| 3616 | M16 |
| 3630 | E12 |
| 3631 | E12 |
| 3632 | E13 |
| 3633 | L12 |
| 3634 | L12 |
| 3635 | L13 |
| 3636 | B14 |
| 3637 | F14 |
| 3950 | A2 |
| 3951 | B2 |
| 4501 | E2 |
| 4502 | H2 |
| 4503 | J2 |
| 4504 | O2 |
| 4565 | C17 |
| 4566 | E17 |
| 6501 | D10 |
| 7501 | A10 |
| 7503a | C16 |
| 7503b | E16 |
| 7504a | K16 |
| 7504b | M16 |
| 7571a | M6 |
| 7571b | J6 |
| 7572 | J10 |

# VOLUME CONTROL PART FR965 - FR975


HEADPHONE AMPLIFIER
MDM
MUTE
6 CH DVD INPUT PART
To / From Source Selector Part
Left in from Left out
Right in from Right out
DownmR
DownmL
Left MDM
Right MDM
ss data
ss clk
ss ce
7641 TDA7437
7642 TDA7437
7643 TDA7437
LEFT CHANNEL
RIGHT CHANNEL
SOURCE SELECTOR
LOGIC CONTROL LEFT & RIGHT
LOGIC CONTROL CENTER + SUBWOOFER
LOGIC CONTROL SURROUND LEFT & RIGHT
VOLUME LOUDNESS
TREBLE
MIDDLE
BASS
VOLUME 2 FADER
DIGITAL SUPPLY
I²C INTERFACE
MUTE CONTROL
ANALOG SUPPLY
IN GAIN
Front L
Front R
Center out
Subwoofer
Surr L
Surr R
sofac scl
sofac1 sda1
sofac2 sda2
mute lr
mute c s sub
To/From 1410 Front panel
From Amplifier
7601b NJM4556AM
7601a NJM4556AM
7660a NJM4560M
7660b NJM4560M
Center pre-out
Subwoofer pre-out
To 1437 Front Part
Surround Left
Surround Right
Right
Center
DVD IN
VCR IN
TV IN
Centre/ Subwoofer
Front Left/Right
Surround Left/Right

Δ Only in FR975
○ Only in FR965
$ Only in FR965/17
V Voltage measured during normal operation
Source position : Tuner FM
No special features ON
Stand by

VOLUME CONTROL PART FR965 - FR975
3104 217 06420 / 06430 / 06490


HEADPHONE AMPLIFIER
+9V Voltage Regulator
MUTE
VIDEO SELECTOR PART a
SUBWOOFER PART
P50 PART
VIDEO SELECTOR PART b
VIDEO SELECTOR PART
LOGIC CONTROL LEFT & RIGHT
LOGIC CONTROL CENTER + SUBWOOFER
LOGIC CONTROL SURROUND LEFT & RIGHT
VOLUME LOUDNESS
TREBLE
MIDDLE
BASS
VOLUME 2 FADER
IN GAIN
DIGITAL SUPPLY
I²C INTERFACE
MUTE CONTROL
ANALOG SUPPLY
NJM4556AM
NJM4560M
BC817-40
BC857B
BC337-40
BC847B
BC557B
STV6401
CLAMPS
SWITCHES
BUS DECODER
DIGITAL BUFFERS
DVD IN
VCR IN
TV IN
MON OUT
VCR OUT
HP L
HP Gnd
HP R
To 1437 Front Part
To 1439 Front Part
To Amplifier
Left out to Left in
Right out to Right in
Center out to Center in
Surround Right out to Surround Right in
Surround Left out to Surround Left in
Center pre-out
Subwoofer pre-out
Cinema link P50
To Video Selector part b
To 1960 SVHS Video Selector
To 1402 Front Part
sofac scl
sofac1 sda1
sofac2 sda2
Left
Right
Center
Surround Left
Surround Right
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
A B C D E F G H I J K L M N O

|  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|
| 1502 | M1 | 2694 | O13 | 3664 | J12 | 6650 | B26 |
| 1503 | K3 | 2695 | A13 | 3665 | F13 | 6801 | L23 |
| 1515a | A23 | 2696 | E13 | 3666 | J13 | 6802 | L23 |
| 1520 | G1 | 2697 | F13 | 3667 | K12 | 6803 | M23 |
| 1521 | C4 | 2698 | J13 | 3668 | O12 | 6804 | N23 |
| 1523 | F4 | 2699 | K13 | 3669 | K13 | 6805 | N23 |
| 1525 | C30 | 2700 | O13 | 3670 | O13 | 6806 | O23 |
| 1526 | E24 | 2801 | L23 | 3671 | A16 | 6807 | N29 |
| 1540 | H30 | 2802 | N23 | 3672 | E16 | 6808 | O29 |
| 1542 | K1 | 2803 | O23 | 3673 | A17 | 6809 | M28 |
| 1550 | G30 | 2804 | J26 | 3674 | E17 | 6810 | F27 |
| 1552 | E24 | 2805 | L24 | 3675 | B16 | 6811 | E27 |
| 1554 | E25 | 2806 | M24 | 3676 | C16 | 6831 | J29 |
| 1560 | H25 | 2807 | N24 | 3677 | F16 | 6832 | J29 |
| 1563 | K2 | 2808 | N24 | 3678 | J16 | 7601a | D20 |
| 1601 | A23 | 2809 | F28 | 3679 | F16 | 7601b | B20 |
| 1801 | K21 | 2810 | F28 | 3680 | J16 | 7621 | B22 |
| 1802a | N30 | 2811 | E28 | 3681 | G16 | 7622 | D22 |
| 1802b | M21 | 2812 | E28 | 3682 | H16 | 7641 | A8 |
| 1803a | N30 | 2813 | M27 | 3683 | K16 | 7642 | F8 |
| 1803b | N21 | 2814 | M29 | 3684 | O16 | 7643 | L8 |
| 2501 | M4 | 2815 | L24 | 3685 | K16 | 7644 | A25 |
| 2502 | N4 | 2816 | O27 | 3686 | O16 | 7651 | A18 |
| 2505 | N4 | 2817 | M27 | 3687 | L16 | 7652 | E18 |
| 2506 | L4 | 2818 | L22 | 3688 | M16 | 7653 | F18 |
| 2507 | K4 | 2821 | N22 | 3689 | C18 | 7654 | J18 |
| 2531 | F19 | 2822 | O22 | 3690 | D18 | 7655 | K18 |
| 2532 | J19 | 2831 | I28 | 3691 | G18 | 7656 | O18 |
| 2533 | A15 | 2832 | J28 | 3692 | I18 | 7657 | C18 |
| 2534 | E15 | 2833 | J30 | 3693 | M18 | 7658 | G18 |
| 2535 | F15 | 2834 | G29 | 3694 | M18 | 7660a | G20 |
| 2536 | J15 | 2835 | K2 | 3695 | C18 | 7660b | I20 |
| 2537 | K15 | 2836 | L2 | 3696 | C18 | 7661 | G22 |
| 2538 | O15 | 2837 | J27 | 3697 | C17 | 7662 | I22 |
| 2539 | B25 | 2851 | G19 | 3698 | H18 | 7801 | M28 |
| 2540 | B26 | 2852 | I19 | 3699 | G18 | 7802 | M29 |
| 2563 | C25 | 2853 | G19 | 3700 | H17 | 7803 | K24 |
| 2564 | E15 | 2854 | H19 | 3801 | L22 | 9506 | O2 |
| 2565 | J15 | 2855 | H20 | 3802 | M22 | 9648 | H5 |
| 2566 | O15 | 2856 | H20 | 3803 | N29 |  |  |
| 2567 | C17 | 2857 | J21 | 3804 | N22 |  |  |
| 2568 | G17 | 2858 | J20 | 3805 | K27 |  |  |
| 2569 | C29 | 2860 | F20 | 3806 | K27 |  |  |
| 2603 | B19 | 2861 | F5 | 3809 | L22 |  |  |
| 2604 | C19 | 2862 | C7 | 3810 | L28 |  |  |
| 2605 | C20 | 2863 | E7 | 3811 | N22 |  |  |
| 2606 | C20 | 2864 | G7 | 3812 | M28 |  |  |
| 2607 | B21 | 2865 | I7 | 3813 | N28 |  |  |
| 2608 | D21 | 2866 | M7 | 3814 | O22 |  |  |
| 2610 | D19 | 2867 | N7 | 3815 | N29 |  |  |
| 2611 | E20 | 2868 | A7 | 3816 | L29 |  |  |
| 2612 | G21 | 2869 | D7 | 3817 | L28 |  |  |
| 2613 | I21 | 2871 | A10 | 3818 | M29 |  |  |
| 2614 | A20 | 2872 | E10 | 3819 | J25 |  |  |
| 2615 | A21 | 2873 | E10 | 3820 | F27 |  |  |
| 2616 | E21 | 2875 | K10 | 3821 | E27 |  |  |
| 2617 | A19 | 2876 | O10 | 3831 | H28 |  |  |
| 2618 | D19 | 2877 | A13 | 3832 | J28 |  |  |
| 2619 | A22 | 2878 | E13 | 3834 | G28 |  |  |
| 2620 | D22 | 2879 | E13 | 3851 | G20 |  |  |
| 2628 | N16 | 2880 | J13 | 3852 | H20 |  |  |
| 2629 | N16 | 2881 | K13 | 3853 | G19 |  |  |
| 2630 | C16 | 2882 | O13 | 3854 | I19 |  |  |
| 2631 | H16 | 2883 | B7 | 3855 | I21 |  |  |
| 2632 | N16 | 2884 | D7 | 3856 | F21 |  |  |
| 2633 | B16 | 2885 | G7 | 3857 | F20 |  |  |
| 2634 | G16 | 2886 | H7 | 3858 | J20 |  |  |
| 2635 | L16 | 2887 | L7 | 3859 | G21 |  |  |
| 2636 | D16 | 2888 | M7 | 3860 | H21 |  |  |
| 2637 | D16 | 2926 | F21 | 3871 | A10 |  |  |
| 2638 | I16 | 2934 | O4 | 3872 | E10 |  |  |
| 2639 | I16 | 2937 | B19 | 3873 | A10 |  |  |
| 2641 | A8 | 3501 | M4 | 3874 | E10 |  |  |
| 2642 | C7 | 3502 | M4 | 3875 | F10 |  |  |
| 2643 | B7 | 3505 | K4 | 3877 | F10 |  |  |
| 2644 | D8 | 3506 | L4 | 3878 | J11 |  |  |
| 2645 | B8 | 3509 | N4 | 3879 | K10 |  |  |
| 2646 | D8 | 3510 | O4 | 3880 | O10 |  |  |
| 2647 | F8 | 3511 | M3 | 3881 | K10 |  |  |
| 2648 | H8 | 3512 | M3 | 3882 | O10 |  |  |
| 2649 | G8 | 3560 | G21 | 3883 | A13 |  |  |
| 2650 | H8 | 3561 | A25 | 3884 | E13 |  |  |
| 2651 | G8 | 3562 | B25 | 3885 | E13 |  |  |
| 2652 | I8 | 3563 | I21 | 3886 | J13 |  |  |
| 2655 | L8 | 3601 | A19 | 3887 | K13 |  |  |
| 2656 | M8 | 3602 | D19 | 3888 | O13 |  |  |
| 2657 | L7 | 3603 | A19 | 3889 | H22 |  |  |
| 2658 | N7 | 3604 | E19 | 3890 | H22 |  |  |
| 2659 | A10 | 3605 | B19 | 3891 | A17 |  |  |
| 2660 | E10 | 3606 | D19 | 3892 | E17 |  |  |
| 2661 | F10 | 3607 | B20 | 3893 | F18 |  |  |
| 2662 | I10 | 3608 | C20 | 3895 | K18 |  |  |
| 2663 | K10 | 3609 | B21 | 3896 | O18 |  |  |
| 2664 | O10 | 3610 | D21 | 3938 | C21 |  |  |
| 2665 | A11 | 3611 | A22 | 3939 | C21 |  |  |
| 2666 | E11 | 3612 | D22 | 3940 | D7 |  |  |
| 2667 | F11 | 3618 | G21 | 3941 | B7 |  |  |
| 2668 | I11 | 3619 | I21 | 3944 | H7 |  |  |
| 2669 | K11 | 3620 | A7 | 3945 | F7 |  |  |
| 2670 | O11 | 3621 | C7 | 3948 | M7 |  |  |
| 2671 | A11 | 3622 | B21 | 3949 | K7 |  |  |
| 2672 | E11 | 3623 | D21 | 3952 | K3 |  |  |
| 2673 | F11 | 3627 | D21 | 3953 | L3 |  |  |
| 2674 | I11 | 3629 | A20 | 3954 | N3 |  |  |
| 2675 | K11 | 3641 | B7 | 3955 | O3 |  |  |
| 2676 | O11 | 3642 | D7 | 4259 | D4 |  |  |
| 2677 | A12 | 3643 | B7 | 4642 | C3 |  |  |
| 2678 | E12 | 3644 | E7 | 4644 | D3 |  |  |
| 2679 | F12 | 3645 | C7 | 4652 | D30 |  |  |
| 2680 | I12 | 3646 | E7 | 4653 | D3 |  |  |
| 2681 | K12 | 3649 | G7 | 4832 | H29 |  |  |
| 2682 | O12 | 3650 | H7 | 4835 | L2 |  |  |
| 2683 | A12 | 3651 | G7 | 6601 | B21 |  |  |
| 2684 | E12 | 3652 | I7 | 6602 | C21 |  |  |
| 2685 | F12 | 3655 | L7 | 6641 | B18 |  |  |
| 2686 | I12 | 3656 | N7 | 6642 | D18 |  |  |
| 2687 | K12 | 3657 | M7 | 6643 | G18 |  |  |
| 2688 | O12 | 3658 | N7 | 6644 | I18 |  |  |
| 2689 | A13 | 3659 | A12 | 6645 | L18 |  |  |
| 2690 | E13 | 3660 | E12 | 6646 | N18 |  |  |
| 2691 | F13 | 3661 | A13 | 6647 | G22 |  |  |
| 2692 | I13 | 3662 | E13 | 6648 | I22 |  |  |
| 2693 | K13 | 3663 | F12 | 6649 | C25 |  |  |

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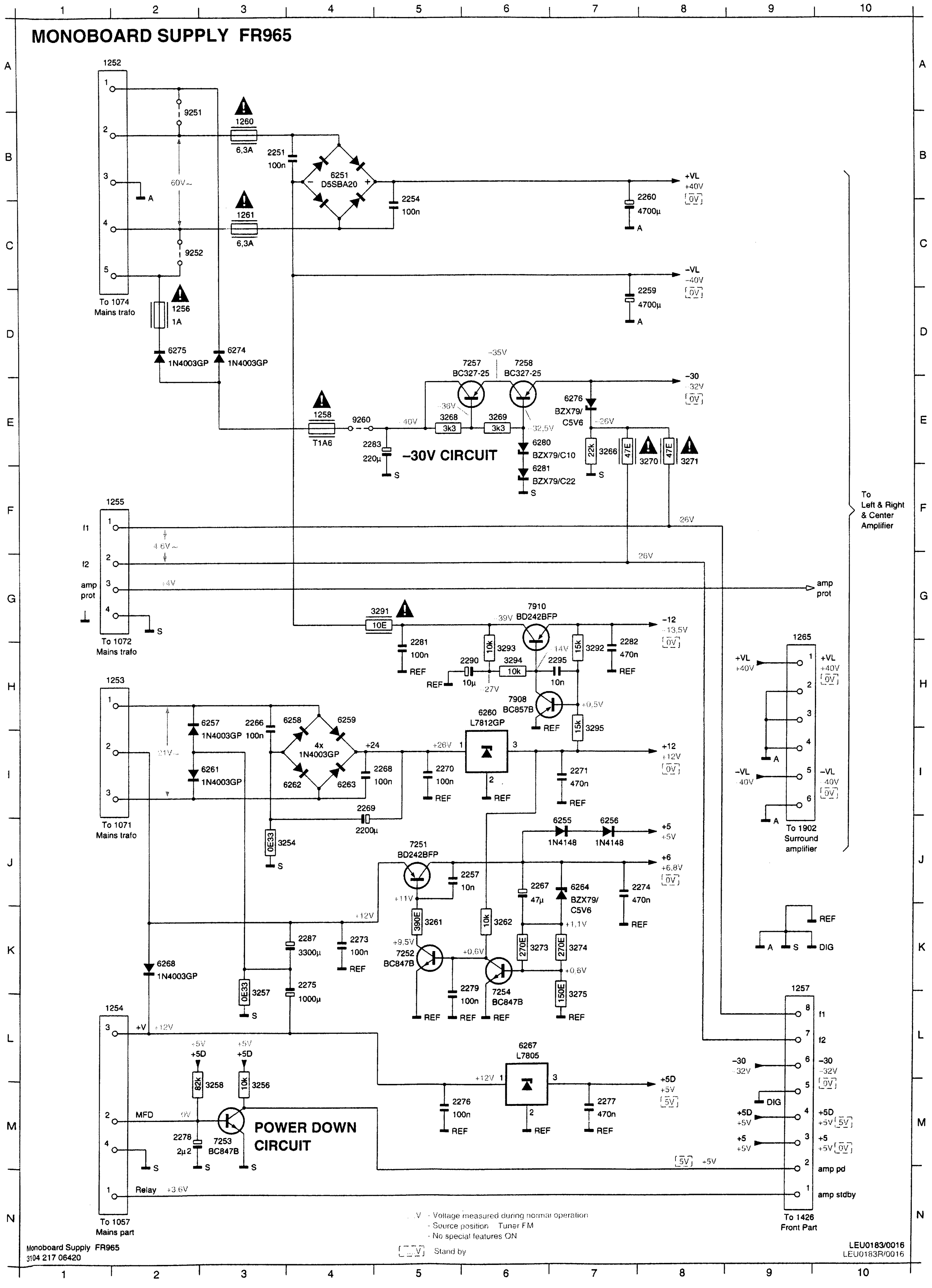
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1252 | A1 | 1258 | E4 | 2257 | J5 | 2269 | I4 | 2276 | M5 | 2283 | E4 | 3257 | L3 | 3269 | E6 | 3291 | G4 | 6255 | J7 | 6261 | I3 | 6274 | D3 | 7252 | K5 | 7910 | G6 |
| 1253 | H1 | 1260 | B3 | 2259 | D7 | 2270 | I5 | 2277 | M7 | 2287 | K4 | 3258 | M3 | 3270 | E7 | 3292 | H7 | 6256 | J7 | 6262 | I3 | 6275 | D2 | 7253 | M3 | 9251 | B2 |
| 1254 | L1 | 1261 | C3 | 2260 | C7 | 2271 | I7 | 2278 | M2 | 2290 | H5 | 3261 | K5 | 3271 | E8 | 3293 | H6 | 6257 | H3 | 6263 | I4 | 6276 | E7 | 7254 | L6 | 9252 | C2 |
| 1255 | F1 | 1265 | G9 | 2266 | H3 | 2273 | K4 | 2279 | K5 | 2295 | H6 | 3262 | K6 | 3273 | K6 | 3294 | H6 | 6258 | H3 | 6264 | J7 | 6280 | E6 | 7257 | D5 | 9260 | E4 |
| 1256 | D2 | 2251 | B3 | 2267 | J6 | 2274 | J7 | 2281 | H5 | 3254 | J3 | 3266 | E7 | 3274 | K7 | 3295 | I7 | 6259 | H4 | 6267 | L6 | 6281 | F6 | 7258 | D6 | | |
| 1257 | K9 | 2254 | C5 | 2268 | I4 | 2275 | K4 | 2282 | H7 | 3256 | M3 | 3268 | E5 | 3275 | L7 | 6251 | B4 | 6260 | H6 | 6268 | K2 | 7251 | J5 | 7908 | H6 | | |

## MONOBOARD SUPPLY FR965

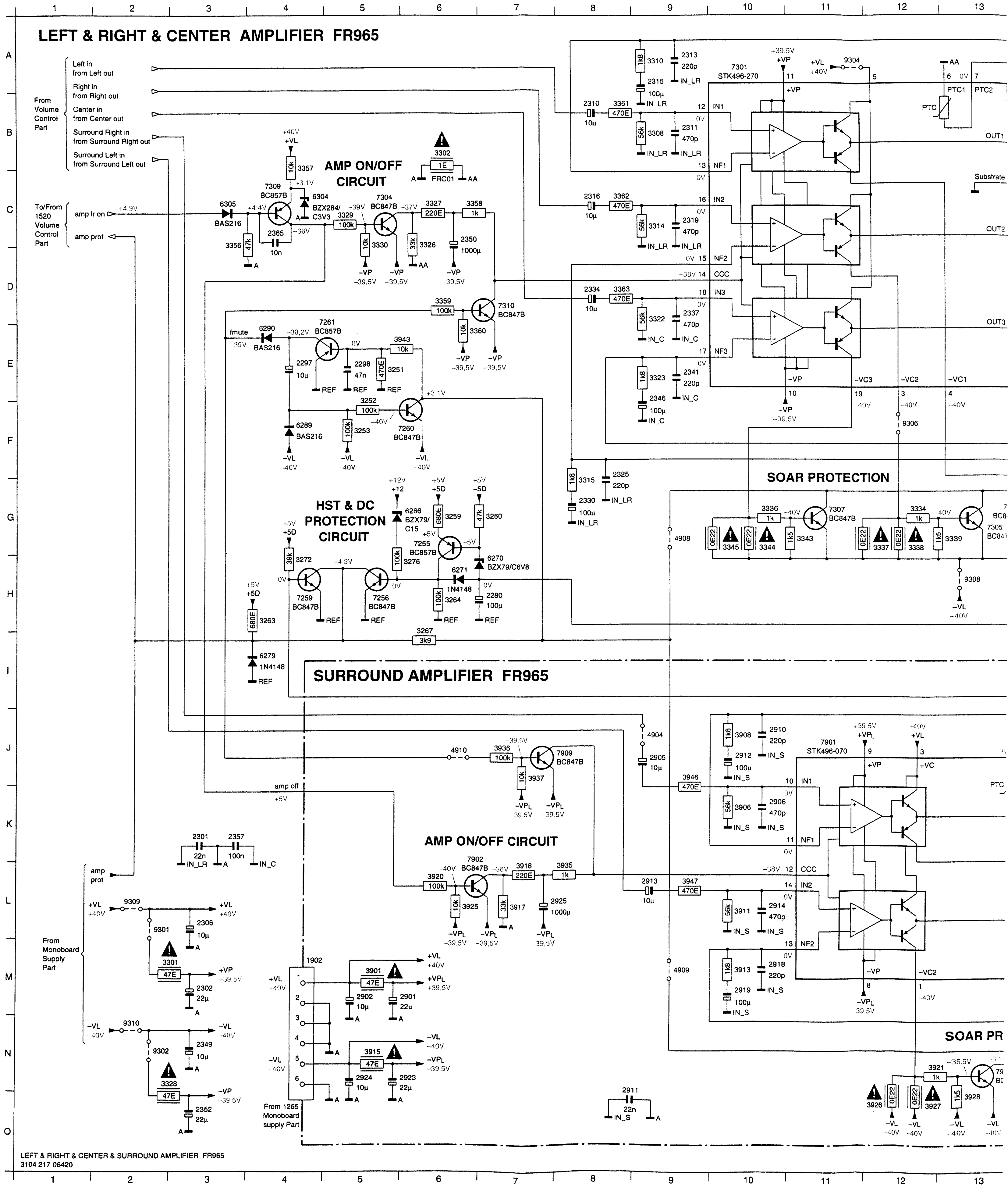

1252
To 1074 Mains trafo
9251
9252
1260 6,3A
1261 6,3A
1256 1A
2251 100n
6251 D5SBA20
2254 100n
2260 4700μ
2259 4700μ
+VL +40V
-VL -40V
6275 1N4003GP
6274 1N4003GP
7257 BC327-25
7258 BC327-25
1258 T1A6
9260
3268 3k3
3269 3k3
2283 220μ
-30V CIRCUIT
6276 BZX79/C5V6
6280 BZX79/C10
6281 BZX79/C22
3266 22k
3270 47E
3271 47E
-30 -32V
1255
To 1072 Mains trafo
amp prot
To Left & Right & Center Amplifier
3291 10E
7910 BD242BFP
2281 100n
3293 10k
3294 10k
2290 10μ
2295 10n
3292 15k
2282 470n
7908 BC857B
3295 15k
6260 L7812GP
-12 -13,5V
+12 +12V
1253
To 1071 Mains trafo
6257 1N4003GP
6261 1N4003GP
2266 100n
6258 6259 6262 6263 4x 1N4003GP
2268 100n
2269 2200μ
2270 100n
2271 470n
3254 0E33
6255 1N4148
6256 1N4148
+5 +5V
+6 +6,8V
7251 BD242BFP
2257 10n
2267 47μ
6264 BZX79/C5V6
2274 470n
3261 390E
3262 10k
3273 270E
3274 270E
7252 BC847B
7254 BC847B
2279 100n
3275 150E
2287 3300μ
2273 100n
2275 1000μ
3257 0E33
6268 1N4003GP
1254
To 1057 Mains part
Relay +3.6V
MFD
3258 82k
3256 10k
2278 2μ2
7253 BC847B
POWER DOWN CIRCUIT
6267 L7805
2276 100n
2277 470n
+5D +5V
1265
To 1902 Surround amplifier
1257
To 1426 Front Part
amp pd
amp stdby
REF
DIG

V - Voltage measured during normal operation
- Source position Tuner FM
- No special features ON
V Stand by

Monoboard Supply FR965
3104 217 06420

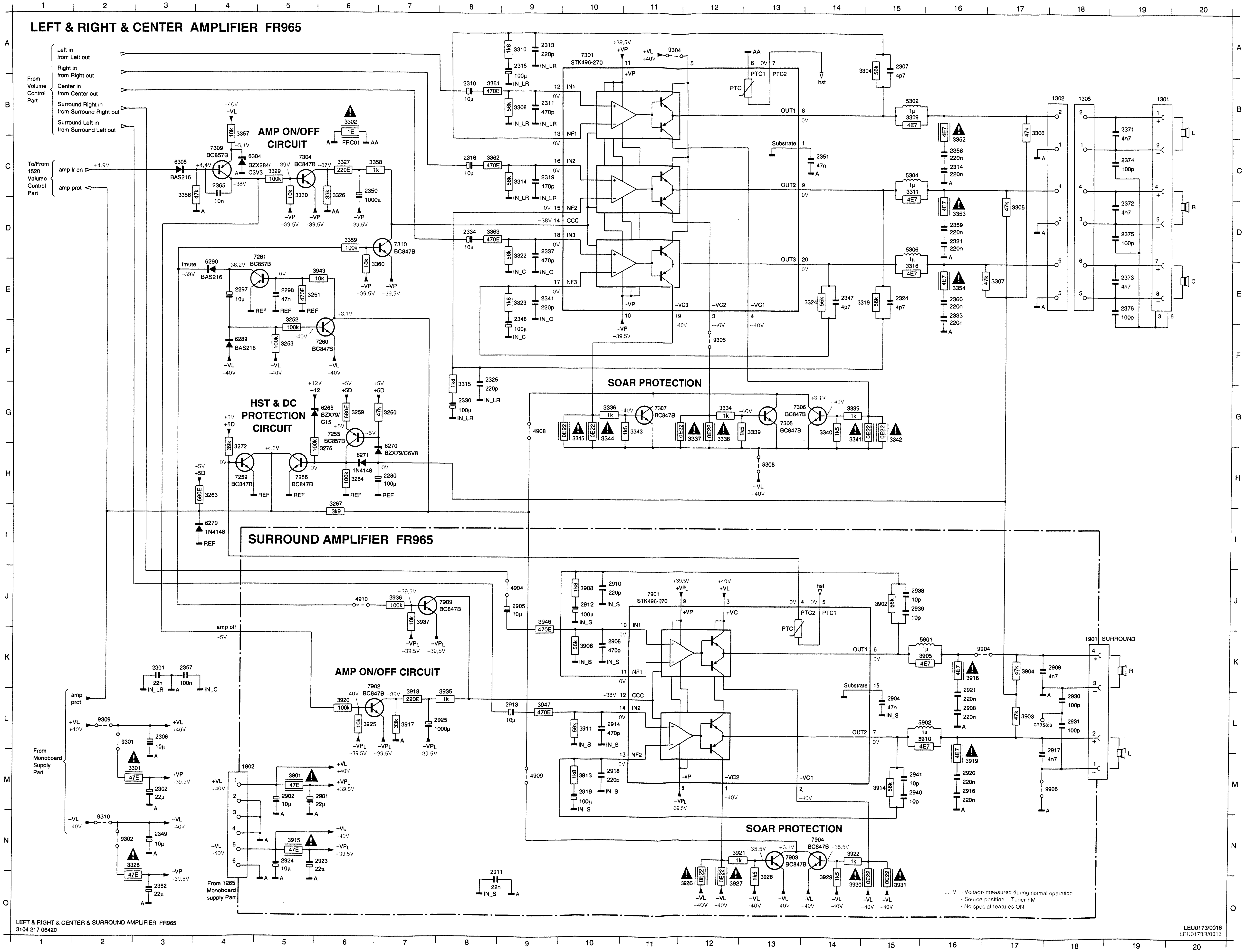
LEU0183/0016
LEU0183R/0016

## LEFT & RIGHT & CENTER AMPLIFIER FR965


From Volume Control Part
Left in from Left out
Right in from Right out
Center in from Center out
Surround Right in from Surround Right out
Surround Left in from Surround Left out
To/From 1520 Volume Control Part
amp lr on
amp prot
AMP ON/OFF CIRCUIT
3302 1E FRC01
7309 BC857B
6305 BAS216
6304 BZX284/C3V3
7304 BC847B
3329 100k
3327 220E
3358 1k
2350 1000μ
3359 100k
7310 BC847B
7301 STK496-270
3310 1k8
2313 220p
2315 100μ
3361 470E
3308 56k
2311 470p
3362 470E
3314 56k
2319 470p
3363 470E
3322 56k
2337 470p
3323 1k8
2341 220p
2346 100μ
9304
PTC1 PTC2
OUT1
OUT2
OUT3
Substrate
fmute
6290 BAS216
7261 BC857B
3943 10k
3251 470E
3252 100k
7260 BC847B
6289 BAS216
3253 100k
HST & DC PROTECTION CIRCUIT
6266 BZX79/C15
7255 BC857B
6270 BZX79/C6V8
6271 1N4148
7259 BC847B
7256 BC847B
3267 3k9
6279 1N4148
SOAR PROTECTION
7307 BC847B
7305 BC847B
3336 1k
3334 1k
SURROUND AMPLIFIER FR965
7901 STK496-070
7909 BC847B
3936 100k
AMP ON/OFF CIRCUIT
7902 BC847B
3920 100k
3918 220E
3935 1k
2925 1000μ
3946 470E
3947 470E
From Monoboard Supply Part
1902
From 1265 Monoboard supply Part
3901 47E
3915 47E
3301 47E
3328 47E
SOAR PR

LEFT & RIGHT & CENTER & SURROUND AMPLIFIER FR965
3104 217 06420

## LEFT & RIGHT & CENTER AMPLIFIER FR965


From Volume Control Part
Left in from Left out
Right in from Right out
Center in from Center out
Surround Right in from Surround Right out
Surround Left in from Surround Left out
To/From 1520 Volume Control Part
amp lr on
amp prot
AMP ON/OFF CIRCUIT
HST & DC PROTECTION CIRCUIT
fmute
7301 STK496-270
IN1
IN2
IN3
NF1
NF2
NF3
CCC
OUT1
OUT2
OUT3
Substrate
PTC1
PTC2
hst
SOAR PROTECTION
1302
1305
1301
L
R
C
SURROUND AMPLIFIER FR965
7901 STK496-070
amp off
AMP ON/OFF CIRCUIT
SOAR PROTECTION
1901 SURROUND
From Monoboard Supply Part
1902
From 1265 Monoboard supply Part
chassis

....V - Voltage measured during normal operation
- Source position : Tuner FM
- No special features ON

LEFT & RIGHT & CENTER & SURROUND AMPLIFIER FR965
3104 217 08420

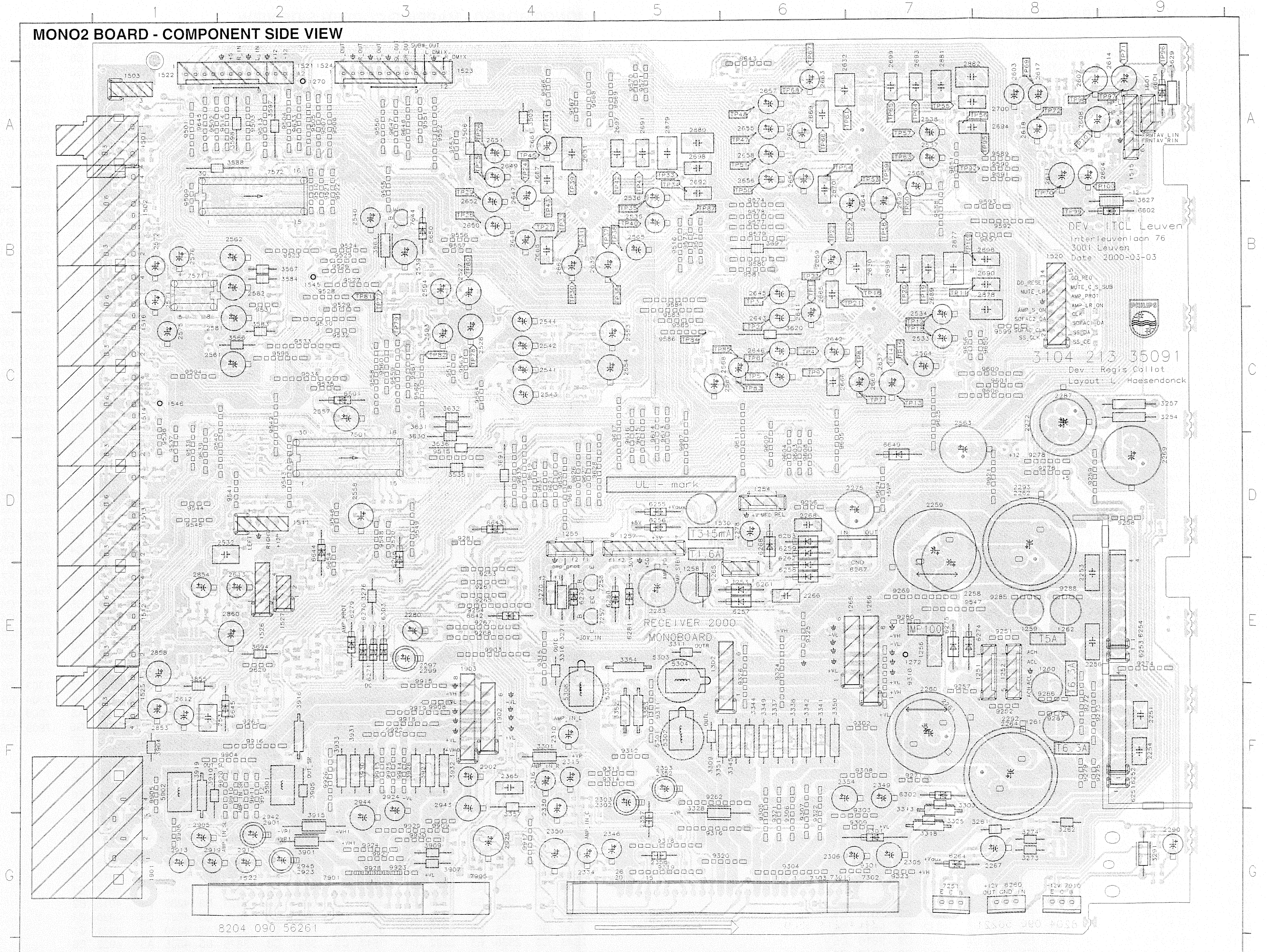
LEU0173/0016
LEU0173R/0016

| | |
|---|---|
| 1301 | B19 |
| 1302 | B18 |
| 1305 | B18 |
| 1901 | K18 |
| 1902 | M4 |
| 2280 | H7 |
| 2297 | E4 |
| 2298 | E5 |
| 2301 | K3 |
| 2302 | M3 |
| 2306 | L3 |
| 2307 | A15 |
| 2310 | B8 |
| 2311 | B9 |
| 2313 | A9 |
| 2314 | C16 |
| 2315 | A9 |
| 2316 | C8 |
| 2319 | C9 |
| 2321 | D16 |
| 2324 | E15 |
| 2325 | F8 |
| 2330 | G8 |
| 2333 | E16 |
| 2334 | D8 |
| 2337 | D9 |
| 2341 | E9 |
| 2346 | F9 |
| 2347 | E14 |
| 2349 | N3 |
| 2350 | C6 |
| 2351 | C14 |
| 2352 | O3 |
| 2357 | K3 |
| 2358 | C16 |
| 2359 | D16 |
| 2360 | E16 |
| 2365 | C4 |
| 2371 | B19 |
| 2372 | D19 |
| 2373 | E19 |
| 2374 | C19 |
| 2375 | D19 |
| 2376 | E19 |
| 2901 | M6 |
| 2902 | M5 |
| 2904 | L15 |
| 2905 | J9 |
| 2906 | K10 |
| 2908 | L16 |
| 2909 | K18 |
| 2910 | J10 |
| 2911 | O8 |
| 2912 | J10 |
| 2913 | L9 |
| 2914 | L10 |
| 2916 | M16 |
| 2917 | L18 |
| 2918 | M10 |
| 2919 | M10 |
| 2920 | M16 |
| 2921 | L16 |
| 2923 | N6 |
| 2924 | N5 |
| 2925 | L7 |
| 2930 | L18 |
| 2931 | L18 |
| 2938 | J15 |
| 2939 | J15 |
| 2940 | M15 |
| 2941 | M15 |
| 3251 | E5 |
| 3252 | F5 |
| 3253 | F5 |
| 3259 | G6 |
| 3260 | G7 |
| 3263 | H4 |
| 3264 | H6 |
| 3267 | I6 |
| 3272 | H4 |
| 3276 | H6 |
| 3301 | M2 |
| 3302 | B6 |
| 3304 | A14 |
| 3305 | D17 |
| 3306 | B17 |
| 3307 | E17 |
| 3308 | B9 |
| 3309 | B15 |
| 3310 | A9 |
| 3311 | C15 |
| 3314 | C9 |
| 3315 | G8 |
| 3316 | E15 |
| 3319 | E14 |
| 3322 | D9 |
| 3323 | E9 |
| 3324 | E13 |
| 3326 | D6 |
| 3327 | C6 |
| 3328 | N2 |
| 3329 | C5 |
| 3330 | D5 |
| 3334 | G12 |
| 3335 | G14 |
| 3336 | G10 |
| 3337 | G12 |
| 3338 | G12 |
| 3339 | G13 |
| 3340 | G14 |
| 3341 | G14 |
| 3342 | G15 |
| 3343 | G11 |
| 3344 | G10 |
| 3345 | G10 |
| 3352 | C16 |
| 3353 | D16 |
| 3354 | E16 |
| 3356 | D3 |
| 3357 | C4 |
| 3358 | C6 |
| 3359 | D6 |
| 3360 | E6 |
| 3361 | B8 |
| 3362 | C8 |
| 3363 | D8 |
| 3901 | M5 |
| 3902 | J15 |
| 3903 | L17 |
| 3904 | K17 |
| 3905 | K15 |
| 3906 | K10 |
| 3908 | J10 |
| 3910 | L15 |
| 3911 | L10 |
| 3913 | M10 |
| 3914 | M15 |
| 3915 | N5 |
| 3916 | K16 |
| 3917 | L7 |
| 3918 | L7 |
| 3919 | M16 |
| 3920 | L6 |
| 3921 | N12 |
| 3922 | N14 |
| 3925 | L6 |
| 3926 | O12 |
| 3927 | O12 |
| 3928 | O13 |
| 3929 | O14 |
| 3930 | O14 |
| 3931 | O15 |
| 3935 | L8 |
| 3936 | J7 |
| 3937 | J7 |
| 3943 | E5 |
| 3946 | J9 |
| 3947 | L9 |
| 4904 | J9 |
| 4908 | G9 |
| 4909 | M9 |
| 4910 | J6 |
| 5302 | B15 |
| 5304 | C15 |
| 5306 | D15 |
| 5901 | K15 |
| 5902 | L15 |
| 6266 | G6 |
| 6270 | H7 |
| 6271 | H6 |
| 6279 | I4 |
| 6289 | F4 |
| 6290 | E4 |
| 6304 | C4 |
| 6305 | C3 |
| 7255 | G6 |
| 7256 | H5 |
| 7259 | H4 |
| 7260 | F5 |
| 7261 | E4 |
| 7301 | A10 |
| 7304 | C5 |
| 7305 | G13 |
| 7306 | G13 |
| 7307 | G11 |
| 7309 | C4 |
| 7310 | D7 |
| 7901 | J11 |
| 7902 | L6 |
| 7903 | N13 |
| 7904 | N14 |
| 7909 | J8 |
| 9301 | L2 |
| 9302 | N2 |
| 9304 | A11 |
| 9306 | F12 |
| 9308 | H13 |
| 9309 | L2 |
| 9310 | N2 |
| 9904 | K16 |
| 9906 | M18 |

10-8

10-8

# MONO2 BOARD - COMPONENT SIDE VIEW



1
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9
A
B
C
D
E
F
G
DEV. ITCL Leuven
Interleuvenlaan 76
3001 Leuven
Date 2000-03-03
3104 213 35091
Dev : Regis Collot
Layout: L. Haesendonck
RECEIVER 2000
MONOBOARD
UL - mark
T315mA
T1.6A
T5A
T6.3A
8204 090 56261

This assembly drawing shows a summary of all versions. For components used in a specific version see shematic diagram and respective partslist.

## MONO2 BOARD - MAPPING COMPONENT SIDE VIEW

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1251 | E8 | 2306 | G7 | 2643 | C6 | 3271 | E4 | 5306 | F4 | 9272 | F8 | 9536 | C1 | 9619 | D4 |
| 1252 | E8 | 2310 | F4 | 2644 | C6 | 3273 | G8 | 5901 | F2 | 9273 | F8 | 9537 | D1 | 9621 | D4 |
| 1253 | E6 | 2315 | F4 | 2645 | B6 | 3274 | G8 | 5902 | F1 | 9274 | E9 | 9538 | D1 | 9624 | D7 |
| 1254 | D6 | 2316 | F4 | 2646 | C6 | 3276 | E3 | 6251 | F9 | 9275 | F8 | 9539 | D1 | 9625 | C7 |
| 1255 | D4 | 2330 | F4 | 2647 | B4 | 3291 | G9 | 6252 | F9 | 9276 | D8 | 9540 | D2 | 9626 | D4 |
| 1256 | E7 | 2334 | G4 | 2648 | B4 | 3301 | F4 | 6253 | E9 | 9278 | D8 | 9541 | D2 | 9627 | D4 |
| 1257 | D5 | 2346 | G5 | 2649 | A4 | 3303 | F7 | 6254 | E9 | 9279 | F8 | 9542 | C2 | 9628 | D5 |
| 1258 | E5 | 2349 | F7 | 2650 | B4 | 3309 | F5 | 6255 | D5 | 9280 | E7 | 9543 | D2 | 9629 | E2 |
| 1259 | E8 | 2350 | G4 | 2651 | A4 | 3311 | E5 | 6256 | D5 | 9281 | D3 | 9544 | D1 | 9630 | D4 |
| 1260 | F8 | 2352 | F5 | 2652 | B4 | 3313 | G7 | 6257 | E6 | 9285 | E8 | 9545 | D1 | 9631 | D4 |
| 1261 | F8 | 2353 | F5 | 2653 | A6 | 3316 | E4 | 6258 | E6 | 9286 | F8 | 9546 | D2 | 9632 | D4 |
| 1262 | E8 | 2354 | F6 | 2654 | A6 | 3318 | G7 | 6259 | D6 | 9287 | F8 | 9547 | E7 | 9633 | A2 |
| 1265 | E7 | 2356 | G5 | 2655 | A6 | 3325 | G7 | 6260 | G8 | 9288 | E8 | 9548 | D3 | 9643 | A6 |
| 1266 | E7 | 2357 | G5 | 2656 | A6 | 3328 | G5 | 6261 | E6 | 9301 | G7 | 9549 | D3 | 9645 | A1 |
| 1270 | A2 | 2365 | F4 | 2657 | A6 | 3337 | F6 | 6262 | E6 | 9302 | F7 | 9550 | A3 | 9647 | A3 |
| 1272 | E7 | 2527 | B3 | 2658 | A6 | 3338 | F6 | 6263 | D6 | 9303 | G7 | 9551 | A3 | 9648 | A3 |
| 1302 | E6 | 2528 | C3 | 2659 | B6 | 3341 | F6 | 6264 | G7 | 9304 | G6 | 9552 | A3 | 9651 | A7 |
| 1501 | A1 | 2531 | F1 | 2660 | C7 | 3342 | F6 | 6266 | D3 | 9305 | G6 | 9553 | A3 | 9654 | D2 |
| 1502 | B1 | 2532 | D2 | 2661 | A4 | 3344 | F6 | 6267 | D7 | 9306 | G6 | 9555 | B3 | 9655 | C8 |
| 1503 | A1 | 2533 | C7 | 2662 | B4 | 3345 | F6 | 6268 | D6 | 9307 | G6 | 9556 | B3 | 9656 | C7 |
| 1511 | D2 | 2534 | C7 | 2663 | A6 | 3349 | F6 | 6270 | E3 | 9308 | F7 | 9557 | B3 | 9657 | B8 |
| 1512 | E1 | 2535 | B5 | 2664 | B7 | 3350 | F6 | 6271 | E3 | 9309 | G7 | 9558 | C3 | 9903 | E4 |
| 1513 | D1 | 2536 | B5 | 2665 | B6 | 3351 | F6 | 6274 | E7 | 9310 | E7 | 9559 | C3 | 9904 | F2 |
| 1514 | C1 | 2537 | A7 | 2666 | C6 | 3352 | F5 | 6275 | E7 | 9311 | F5 | 9560 | C3 | 9905 | F1 |
| 1515 | A9 | 2538 | A7 | 2667 | A4 | 3353 | F5 | 6276 | E4 | 9312 | F5 | 9561 | C3 | 9906 | G1 |
| 1516 | C1 | 2539 | B3 | 2668 | B4 | 3354 | E5 | 6279 | E3 | 9313 | F5 | 9562 | C3 | 9907 | D5 |
| 1520 | B8 | 2540 | B3 | 2669 | A6 | 3357 | F4 | 6280 | E5 | 9314 | F5 | 9563 | C3 | 9908 | F3 |
| 1521 | A2 | 2541 | C4 | 2670 | B6 | 3505 | A4 | 6281 | E5 | 9315 | E4 | 9564 | C4 | 9909 | G3 |
| 1522 | A2 | 2542 | C4 | 2689 | B7 | 3506 | A3 | 6301 | G7 | 9316 | G5 | 9566 | A4 | 9910 | F2 |
| 1523 | A3 | 2543 | C4 | 2690 | B8 | 3535 | D3 | 6302 | F7 | 9318 | G5 | 9567 | A4 | 9911 | F2 |
| 1524 | A3 | 2544 | C4 | 2691 | A5 | 3536 | D3 | 6303 | E3 | 9319 | G5 | 9568 | A4 | 9912 | F2 |
| 1525 | F1 | 2553 | C5 | 2692 | B5 | 3561 | B3 | 6501 | C2 | 9320 | G6 | 9569 | A5 | 9913 | F3 |
| 1526 | E2 | 2554 | C5 | 2693 | A7 | 3566 | C2 | 6601 | A9 | 9321 | G6 | 9570 | A5 | 9914 | F3 |
| 1527 | E2 | 2557 | C3 | 2694 | A7 | 3567 | B2 | 6602 | B9 | 9322 | G6 | 9571 | A5 | 9915 | E3 |
| 1530 | D5 | 2558 | D3 | 2695 | B7 | 3583 | C2 | 6642 | E4 | 9323 | G7 | 9573 | B5 | 9916 | F2 |
| 1545 | B2 | 2561 | C2 | 2696 | B8 | 3584 | B2 | 6643 | D4 | 9324 | E6 | 9574 | B6 | 9917 | G4 |
| 1546 | C1 | 2562 | B2 | 2697 | A5 | 3588 | A1 | 6644 | D2 | 9325 | E6 | 9577 | B6 | 9918 | F3 |
| 1601 | A9 | 2563 | D7 | 2698 | A5 | 3597 | A2 | 6645 | F2 | 9326 | E6 | 9578 | B6 | 9919 | F3 |
| 1901 | G1 | 2564 | C7 | 2699 | A7 | 3598 | A2 | 6649 | D7 | 9501 | A1 | 9579 | B6 | 9920 | F2 |
| 1902 | F4 | 2565 | B5 | 2700 | A7 | 3620 | C6 | 6650 | B3 | 9502 | A1 | 9580 | B6 | 9921 | D8 |
| 1903 | F3 | 2566 | B7 | 2853 | F1 | 3627 | B9 | 7251 | G7 | 9503 | A2 | 9581 | B6 | 9922 | F3 |
| 2251 | F9 | 2567 | C5 | 2854 | E1 | 3629 | A9 | 7257 | E4 | 9504 | A2 | 9583 | C5 | 9923 | G3 |
| 2253 | E8 | 2568 | C6 | 2858 | E1 | 3630 | D3 | 7258 | E4 | 9505 | A2 | 9584 | B5 | 9924 | G3 |
| 2254 | F9 | 2571 | B1 | 2860 | E2 | 3631 | C3 | 7301 | G5 | 9507 | A2 | 9585 | C5 | 9925 | F3 |
| 2256 | E8 | 2572 | B1 | 2877 | B7 | 3632 | C3 | 7302 | G6 | 9508 | A2 | 9586 | C5 | 9926 | F2 |
| 2258 | E7 | 2575 | C1 | 2878 | C8 | 3691 | D4 | 7303 | G5 | 9509 | B1 | 9588 | B7 | 9927 | G3 |
| 2259 | D7 | 2576 | B1 | 2879 | A5 | 3694 | E2 | 7501 | D3 | 9510 | B2 | 9589 | A8 | 9928 | G3 |
| 2260 | F7 | 2581 | C2 | 2880 | A5 | 3697 | B6 | 7571 | B1 | 9511 | C3 | 9590 | A8 | 9929 | G3 |
| 2261 | F7 | 2582 | B2 | 2881 | A7 | 3855 | E1 | 7572 | B2 | 9513 | A2 | 9591 | A8 | 9930 | G3 |
| 2262 | D8 | 2593 | C3 | 2882 | A7 | 3901 | G2 | 7644 | B3 | 9514 | A2 | 9592 | B8 | | |
| 2264 | F8 | 2594 | B3 | 2901 | G2 | 3904 | F1 | 7901 | G2 | 9515 | D3 | 9593 | B8 | | |
| 2266 | E6 | 2603 | A8 | 2902 | F3 | 3905 | F2 | 7905 | G3 | 9516 | B5 | 9594 | C1 | | |
| 2267 | G8 | 2604 | A8 | 2905 | G1 | 3907 | G3 | 7910 | G8 | 9517 | B5 | 9595 | C2 | | |
| 2268 | D6 | 2607 | A8 | 2912 | G2 | 3909 | G3 | 9251 | E8 | 9520 | D3 | 9599 | C8 | | |
| 2269 | D9 | 2608 | A8 | 2913 | G1 | 3910 | F1 | 9252 | F8 | 9521 | B2 | 9600 | C8 | | |
| 2272 | C8 | 2611 | A8 | 2919 | G1 | 3915 | G2 | 9253 | E4 | 9522 | B2 | 9601 | C8 | | |
| 2275 | D7 | 2612 | F1 | 2923 | G2 | 3916 | F2 | 9254 | E4 | 9523 | B2 | 9603 | D6 | | |
| 2278 | D6 | 2613 | E2 | 2924 | F3 | 3919 | F1 | 9256 | D6 | 9524 | B3 | 9604 | D6 | | |
| 2280 | E3 | 2614 | A9 | 2925 | G4 | 3926 | F3 | 9257 | F7 | 9525 | B2 | 9605 | D6 | | |
| 2283 | E5 | 2617 | A8 | 2942 | G2 | 3927 | F3 | 9258 | D9 | 9526 | B2 | 9606 | C8 | | |
| 2287 | C8 | 2618 | A8 | 2943 | F3 | 3930 | F3 | 9259 | D8 | 9527 | B3 | 9608 | D6 | | |
| 2290 | G9 | 2629 | B7 | 2944 | G3 | 3931 | F3 | 9261 | E4 | 9528 | B2 | 9609 | D6 | | |
| 2292 | F8 | 2630 | B7 | 2945 | G2 | 3932 | F3 | 9262 | F5 | 9529 | B2 | 9611 | D6 | | |
| 2293 | D8 | 2631 | A4 | 3254 | C9 | 3933 | F2 | 9263 | F2 | 9530 | C2 | 9613 | C5 | | |
| 2297 | E3 | 2632 | A6 | 3257 | C9 | 5301 | F5 | 9265 | E4 | 9531 | B2 | 9614 | C5 | | |
| 2299 | E3 | 2637 | C7 | 3261 | G8 | 5302 | F5 | 9267 | E4 | 9532 | C2 | 9615 | D5 | | |
| 2302 | F5 | 2639 | B5 | 3262 | G8 | 5303 | E5 | 9268 | E4 | 9533 | C2 | 9616 | D5 | | |
| 2303 | F5 | 2641 | C6 | 3265 | E5 | 5304 | E5 | 9269 | E7 | 9534 | C2 | 9617 | C5 | | |
| 2305 | G7 | 2642 | C6 | 3270 | E4 | 5305 | F4 | 9271 | F7 | 9535 | C2 | 9618 | D4 | | |

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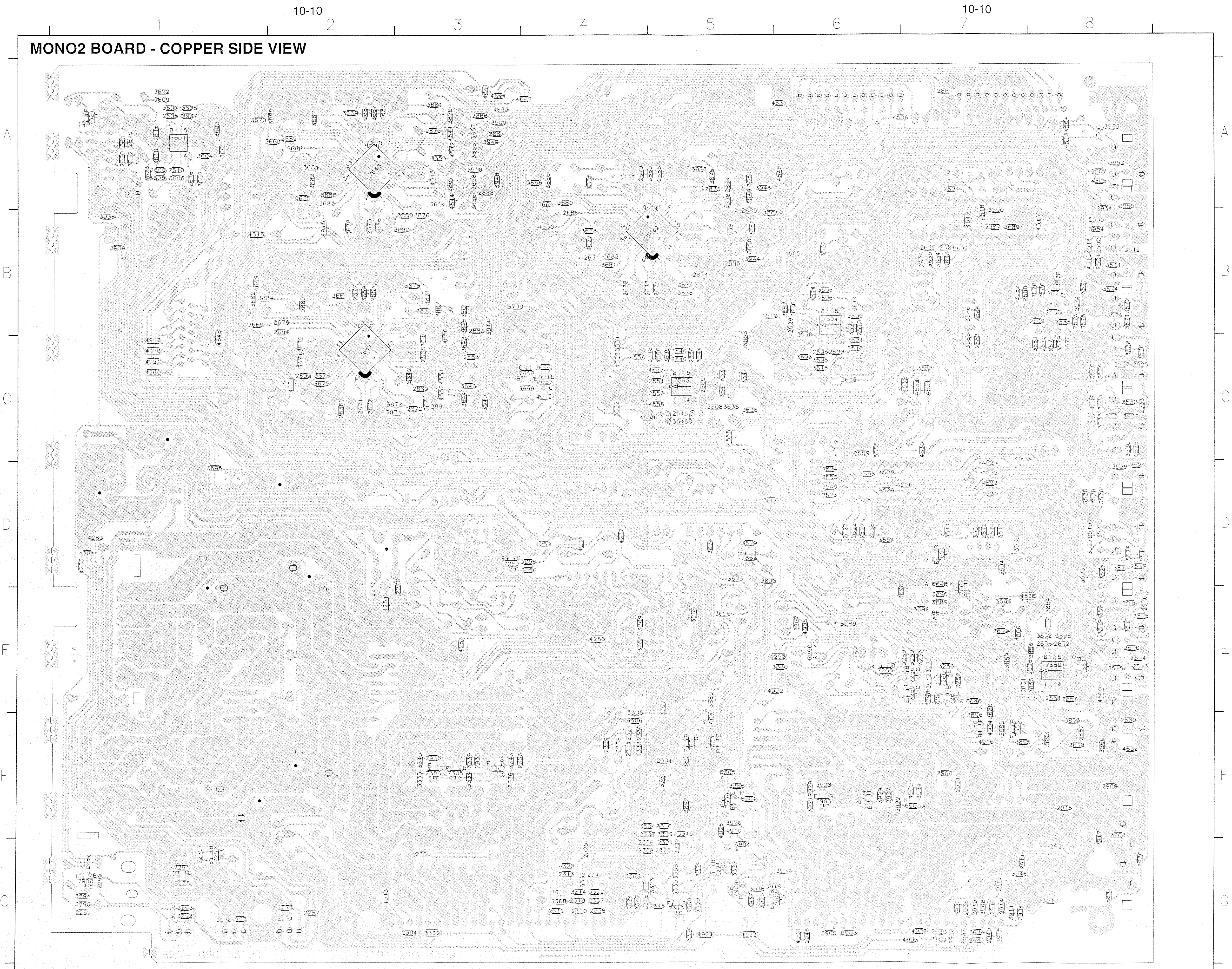
## MONO2 BOARD - MAPPING COPPER SIDE VIEW

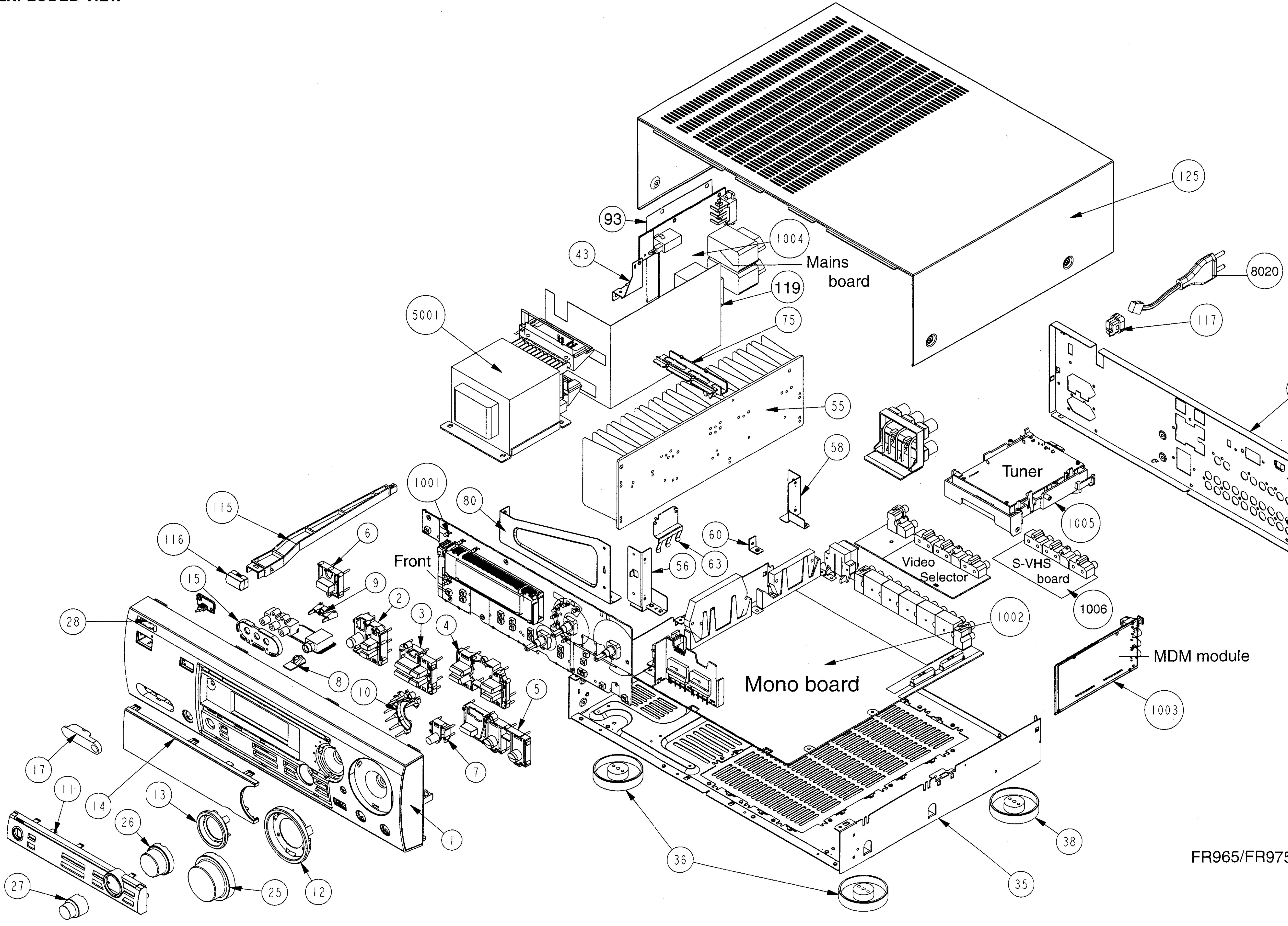
| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2257 | G2 | 2550 | C5 | 2862 | B3 | 3295 | G1 | 3546 | C5 | 3644 | C3 | 3879 | A3 | 4513 | A8 | 4925 | F5 |
| 2270 | G1 | 2551 | C5 | 2863 | C3 | 3302 | G3 | 3547 | C5 | 3645 | B3 | 3880 | B3 | 4514 | B8 | 6289 | E6 |
| 2271 | G1 | 2552 | C5 | 2864 | A5 | 3304 | F5 | 3548 | C5 | 3646 | C3 | 3881 | A3 | 4515 | B8 | 6290 | E6 |
| 2273 | G2 | 2555 | D6 | 2865 | B5 | 3305 | F4 | 3549 | D6 | 3649 | A5 | 3882 | B3 | 4516 | B8 | 6304 | F5 |
| 2274 | G2 | 2556 | D6 | 2866 | A3 | 3306 | F4 | 3550 | D6 | 3650 | B5 | 3883 | B2 | 4517 | B7 | 6305 | F5 |
| 2276 | E3 | 2559 | C6 | 2867 | A3 | 3307 | E5 | 3551 | C4 | 3651 | A5 | 3884 | B1 | 4518 | B7 | 6641 | F5 |
| 2277 | E2 | 2569 | F8 | 2868 | C3 | 3308 | G4 | 3552 | C4 | 3652 | B5 | 3885 | A4 | 4519 | C8 | 6646 | E7 |
| 2279 | G1 | 2570 | B6 | 2869 | C3 | 3310 | F5 | 3553 | C7 | 3653 | A3 | 3886 | A4 | 4520 | C7 | 6647 | E7 |
| 2281 | G1 | 2573 | B8 | 2871 | B3 | 3314 | G4 | 3554 | D6 | 3654 | A3 | 3887 | A2 | 4521 | D7 | 6648 | D7 |
| 2282 | G1 | 2574 | B8 | 2872 | C3 | 3315 | F5 | 3555 | C6 | 3655 | A3 | 3888 | A2 | 4522 | D7 | 6901 | F7 |
| 2295 | G1 | 2577 | C8 | 2873 | A5 | 3319 | F5 | 3556 | C5 | 3656 | A3 | 3889 | E7 | 4523 | D7 | 6903 | G6 |
| 2298 | E7 | 2578 | B8 | 2874 | B5 | 3320 | E6 | 3557 | B6 | 3657 | A3 | 3890 | E7 | 4524 | D7 | 6904 | G5 |
| 2301 | F5 | 2579 | C8 | 2875 | A3 | 3322 | G4 | 3560 | F8 | 3658 | A3 | 3891 | F5 | 4526 | E7 | 6905 | G6 |
| 2304 | G3 | 2580 | B7 | 2876 | B3 | 3323 | G4 | 3562 | B6 | 3659 | B2 | 3892 | F5 | 4528 | D6 | 7252 | G1 |
| 2307 | F5 | 2583 | C7 | 2883 | B3 | 3324 | G4 | 3563 | E7 | 3660 | B1 | 3893 | D5 | 4529 | D6 | 7253 | D3 |
| 2308 | G5 | 2584 | B7 | 2884 | C3 | 3326 | G5 | 3571 | B8 | 3661 | B2 | 3894 | D7 | 4530 | C7 | 7254 | G1 |
| 2309 | G5 | 2585 | B8 | 2885 | B5 | 3327 | G5 | 3572 | B8 | 3662 | B1 | 3895 | F7 | 4531 | C7 | 7255 | E6 |
| 2311 | G4 | 2586 | B8 | 2886 | B5 | 3329 | G5 | 3573 | B8 | 3663 | A5 | 3896 | F7 | 4532 | C7 | 7256 | E7 |
| 2312 | G4 | 2595 | C6 | 2887 | A3 | 3330 | G5 | 3574 | B8 | 3664 | A4 | 3902 | G7 | 4533 | C7 | 7259 | E7 |
| 2313 | G4 | 2596 | B6 | 2888 | A3 | 3334 | F3 | 3575 | B8 | 3665 | A4 | 3903 | F8 | 4537 | A6 | 7260 | E7 |
| 2314 | F4 | 2599 | C6 | 2904 | G7 | 3335 | F3 | 3576 | B8 | 3666 | A4 | 3906 | G7 | 4538 | A5 | 7261 | E7 |
| 2319 | G4 | 2600 | B6 | 2906 | G7 | 3336 | F3 | 3577 | C8 | 3667 | A2 | 3908 | G7 | 4539 | B5 | 7304 | G5 |
| 2320 | G4 | 2601 | A7 | 2907 | G7 | 3339 | F3 | 3578 | B8 | 3668 | A2 | 3911 | G7 | 4540 | A6 | 7305 | F3 |
| 2321 | F4 | 2602 | B7 | 2908 | F7 | 3340 | F3 | 3579 | C8 | 3669 | A2 | 3913 | G7 | 4541 | A3 | 7306 | F3 |
| 2324 | G5 | 2605 | A1 | 2909 | F8 | 3343 | F3 | 3580 | B8 | 3670 | A1 | 3914 | G7 | 4542 | A3 | 7307 | F3 |
| 2325 | G4 | 2606 | A1 | 2910 | G7 | 3356 | F5 | 3581 | C8 | 3671 | C2 | 3917 | G6 | 4543 | A3 | 7309 | F5 |
| 2326 | G5 | 2609 | B8 | 2911 | G7 | 3358 | G5 | 3582 | B7 | 3672 | C2 | 3918 | G6 | 4544 | A3 | 7310 | G5 |
| 2327 | G5 | 2610 | A1 | 2914 | G7 | 3359 | G5 | 3585 | C7 | 3673 | D5 | 3920 | F5 | 4545 | B1 | 7503 | C5 |
| 2333 | F4 | 2615 | A1 | 2915 | G7 | 3360 | G5 | 3586 | B7 | 3674 | D5 | 3921 | F6 | 4548 | C1 | 7504 | B6 |
| 2337 | G4 | 2616 | A1 | 2916 | F8 | 3361 | F5 | 3587 | B7 | 3675 | C2 | 3922 | F6 | 4550 | C3 | 7601 | A1 |
| 2338 | G4 | 2619 | A1 | 2917 | G8 | 3362 | G4 | 3589 | B7 | 3676 | C2 | 3925 | G5 | 4551 | C3 | 7621 | A1 |
| 2341 | G4 | 2620 | A1 | 2918 | G7 | 3363 | G4 | 3590 | B7 | 3677 | B4 | 3928 | F6 | 4552 | C3 | 7622 | A1 |
| 2345 | G4 | 2621 | B8 | 2920 | G8 | 3501 | B3 | 3591 | C6 | 3678 | B4 | 3929 | F6 | 4553 | C4 | 7641 | C2 |
| 2347 | G4 | 2622 | D6 | 2921 | F7 | 3502 | C3 | 3592 | B6 | 3679 | D5 | 3934 | F7 | 4555 | C5 | 7642 | B5 |
| 2348 | G5 | 2623 | D6 | 2926 | E8 | 3509 | A3 | 3593 | C6 | 3680 | D5 | 3935 | G5 | 4556 | C4 | 7643 | A2 |
| 2351 | G3 | 2624 | B7 | 2927 | F6 | 3510 | A3 | 3594 | B6 | 3681 | B4 | 3936 | G5 | 4557 | C5 | 7651 | F5 |
| 2358 | F4 | 2625 | B7 | 2929 | F6 | 3511 | B8 | 3595 | C6 | 3682 | B4 | 3937 | G5 | 4558 | C5 | 7652 | F5 |
| 2359 | F4 | 2626 | B7 | 2930 | G8 | 3512 | B8 | 3596 | B6 | 3683 | A2 | 3938 | B1 | 4559 | C4 | 7653 | D5 |
| 2360 | F4 | 2627 | D6 | 2931 | G8 | 3513 | D7 | 3601 | A1 | 3684 | A2 | 3939 | B1 | 4560 | E8 | 7654 | D7 |
| 2363 | F3 | 2628 | B2 | 2932 | C8 | 3514 | D7 | 3602 | A1 | 3685 | F7 | 3940 | C3 | 4564 | A8 | 7655 | F7 |
| 2501 | B8 | 2633 | C2 | 2933 | C8 | 3515 | E8 | 3603 | A1 | 3686 | E7 | 3941 | B3 | 4565 | C5 | 7656 | F7 |
| 2502 | B8 | 2634 | B4 | 2934 | B8 | 3516 | E8 | 3604 | A1 | 3687 | A2 | 3943 | E7 | 4566 | C5 | 7657 | C4 |
| 2505 | B8 | 2635 | A2 | 2935 | F3 | 3517 | E8 | 3605 | A1 | 3688 | A2 | 3944 | B5 | 4641 | A3 | 7658 | C4 |
| 2506 | A8 | 2636 | C2 | 2936 | F3 | 3518 | E8 | 3606 | A1 | 3689 | E5 | 3945 | A5 | 4642 | A4 | 7660 | E8 |
| 2507 | A8 | 2638 | B4 | 2937 | A1 | 3519 | E8 | 3607 | A1 | 3690 | E5 | 3946 | G7 | 4644 | A3 | 7661 | E8 |
| 2508 | C5 | 2671 | C2 | 2938 | G7 | 3520 | E8 | 3608 | A1 | 3692 | E7 | 3947 | G8 | 4649 | B1 | 7662 | E7 |
| 2509 | C5 | 2672 | C2 | 2939 | G7 | 3521 | D8 | 3609 | A1 | 3693 | F8 | 3948 | A3 | 4650 | B4 | 7902 | G6 |
| 2510 | C6 | 2673 | B4 | 2940 | G7 | 3522 | D8 | 3610 | A1 | 3695 | D1 | 3949 | A3 | 4651 | C2 | 7903 | F6 |
| 2511 | D7 | 2674 | B5 | 2941 | G7 | 3523 | D8 | 3611 | A1 | 3696 | C4 | 3950 | D7 | 4652 | F8 | 7904 | F6 |
| 2512 | D7 | 2675 | B2 | 2946 | G6 | 3524 | D8 | 3612 | A1 | 3698 | E6 | 3951 | D7 | 4653 | A3 | 7908 | G1 |
| 2513 | E8 | 2676 | B2 | 3251 | E7 | 3525 | D8 | 3613 | C6 | 3699 | C4 | 3952 | A8 | 4901 | G6 | 7909 | G5 |
| 2514 | E8 | 2677 | B2 | 3252 | E7 | 3526 | D8 | 3614 | B6 | 3700 | B3 | 3953 | A8 | 4902 | G7 | | |
| 2515 | E8 | 2678 | B2 | 3253 | E7 | 3527 | D8 | 3615 | C6 | 3851 | E7 | 3954 | B8 | 4903 | G7 | | |
| 2516 | E8 | 2679 | A4 | 3255 | G1 | 3528 | D8 | 3616 | B6 | 3852 | E8 | 3955 | A8 | 4904 | F7 | | |
| 2517 | D8 | 2680 | A4 | 3256 | D4 | 3529 | D8 | 3618 | F8 | 3853 | F8 | 4251 | E2 | 4905 | B6 | | |
| 2518 | D8 | 2681 | A2 | 3258 | D4 | 3530 | C8 | 3619 | E7 | 3854 | E8 | 4252 | E6 | 4908 | E6 | | |
| 2519 | D8 | 2682 | A2 | 3259 | E7 | 3531 | C8 | 3621 | C3 | 3856 | E8 | 4253 | E3 | 4909 | F7 | | |
| 2520 | D8 | 2683 | B2 | 3260 | E7 | 3532 | C8 | 3622 | A1 | 3857 | F8 | 4256 | D7 | 4910 | F5 | | |
| 2521 | D8 | 2684 | B2 | 3263 | E7 | 3533 | C8 | 3623 | A1 | 3858 | E8 | 4258 | E4 | 4913 | G2 | | |
| 2522 | C8 | 2685 | A5 | 3264 | E6 | 3534 | C8 | 3633 | B7 | 3859 | E7 | 4259 | D4 | 4914 | D4 | | |
| 2523 | D6 | 2686 | B4 | 3266 | E5 | 3537 | C8 | 3634 | B7 | 3860 | E7 | 4260 | C1 | 4915 | C4 | | |
| 2524 | D6 | 2687 | A2 | 3267 | E6 | 3538 | C8 | 3635 | B7 | 3871 | B3 | 4283 | D1 | 4916 | F7 | | |
| 2525 | C8 | 2688 | A2 | 3268 | E4 | 3539 | C8 | 3636 | C5 | 3872 | C3 | 4284 | D1 | 4917 | C1 | | |
| 2526 | C8 | 2851 | E8 | 3269 | E4 | 3540 | C8 | 3637 | C5 | 3873 | B3 | 4285 | D1 | 4918 | B2 | | |
| 2529 | B6 | 2852 | E8 | 3272 | E7 | 3541 | C5 | 3638 | C5 | 3874 | C3 | 4287 | D4 | 4920 | C1 | | |
| 2530 | B6 | 2855 | E8 | 3275 | G1 | 3542 | C5 | 3639 | C5 | 3875 | A5 | 4320 | G4 | 4921 | C1 | | |
| 2545 | C5 | 2856 | E8 | 3292 | G1 | 3543 | C5 | 3641 | C3 | 3876 | B5 | 4505 | A8 | 4922 | E6 | | |
| 2546 | C5 | 2857 | E8 | 3293 | G1 | 3544 | C5 | 3642 | C3 | 3877 | A5 | 4506 | A6 | 4923 | G5 | | |
| 2549 | C5 | 2861 | A7 | 3294 | G1 | 3545 | C5 | 3643 | C3 | 3878 | B5 | 4512 | B5 | 4924 | G5 | | |

## MONO2 BOARD - COPPER SIDE VIEW


10-10
10-10
1
2
3
4
5
6
7
8
A
B
C
D
E
F
G
7601
7643
7642
7641
7504
7503
7660
3104 213 33091

This assembly drawing shows a summary of all versions. For components used in a specific version see shematic diagram and respective partslist.

# EXPLODED VIEW


93
43
1004
Mains board
119
125
5001
75
8020
117
50
55
58
Tuner
1005
1001
80
115
116
6
Front
60
63
56
9
15
2
3
4
28
Video Selector
S-VHS board
1006
1002
MDM module
Mono board
8
10
5
1003
17
7
11
14
13
26
1
36
38
35
27
25
12

FR965/FR975

SCALE 0.250

## *PARTSLIST - EXPLODED VIEW*

### MECHANICAL PARTS FR965/00

| | | |
|---|---|---|
| 1 | 3104 217 52930 | FRONT ASSY |
| 2 | 4822 410 12442 | BUTTON HINGE ASSY SURR. |
| 3 | 4822 410 12435 | BUTTONS HINGE TUNER |
| 4 | 4822 410 12443 | BUTTON HINGE ASSY MENU |
| 5 | 4822 410 12436 | BUTTONS HINGE BASS TREBLE |
| 6 | 4822 410 12437 | BUTTONS EASY LINK |
| 8 | 4822 380 10274 | LIGHT GUIDE SURROUND |
| 9 | 3104 214 38460 | LIGHT GUIDE VIRTUAL/HALL |
| 10 | 4822 380 10277 | LIGHT GUIDE SELECTOR |
| 11 | 3104 217 52760 | ORNAMENTAL PLATE ASSY |
| 12 | 3104 217 52130 | RING KNOB VOLUME |
| 13 | 3104 217 52140 | RING KNOB SOURCE SEL. |
| 14 | 3104 217 52910 | WINDOW DISPLAY ASSY |
| 25 | 4822 410 12438 | KNOB VOLUME |
| 26 | 4822 410 12439 | KNOB SOURCE SELECTOR |
| 27 | 4822 410 12441 | KNOB MENU NAV |
| 28 | 4822 459 10887 | BADGE PHILIPS |
| 36 | 4822 691 10773 | LEG SILVER |
| 38 | 4822 691 10773 | LEG SILVER |
| 115 | 4822 535 10638 | POWER ROD |
| 116 | 4822 462 11176 | POWER CAP |
| 117 | 4822 532 60948 | BUSCH |
| 125 | 4822 442 01817 | COVERPLATE |

### MECHANICAL PARTS FR966/00S

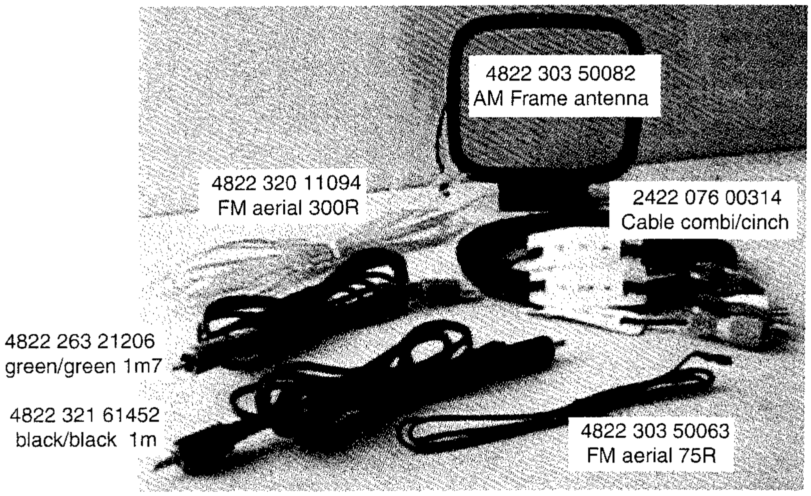
| | | |
|---|---|---|
| 1 | 3104 217 53030 | FRONT ASSY |
| 2 | 3104 217 53130 | BUTTON HINGE SURR. |
| 3 | 3104 217 53140 | BUTTON HINGE TUNER |
| 4 | 3104 217 53120 | BUTTON HINGE MENU |
| 5 | 3104 217 53150 | BUTTON HINGE BASS TREBLE |
| 6 | 3104 217 53110 | BUTTON HINGE EASY LINK |
| 8 | 4822 380 10274 | LIGHT GUIDE SURROUND |
| 9 | 3104 214 38460 | LIGHT GUIDE VIRTUAL/HALL |
| 10 | 4822 380 10277 | LIGHT GUIDE SELECTOR |
| 11 | 3104 217 53040 | ORNAMENTAL PLATE |
| 12 | 3104 217 53080 | RING KNOB VOLUME |
| 13 | 3104 217 53090 | RING KNOB SOURCE SEL. |
| 14 | 3104 217 52910 | WINDOW DISPLAY ASSY |
| 25 | 3104 217 53050 | KNOB VOLUME |
| 26 | 3104 217 53060 | KNOB SOURCE SELECTOR |
| 27 | 3104 217 53070 | KNOB MENU NAV |
| 28 | 4822 459 10887 | BADGE PHILIPS |
| 36 | 4822 691 10773 | LEG SILVER |
| 38 | 4822 691 10773 | LEG SILVER |
| 115 | 4822 535 10638 | POWER ROD |
| 116 | 3104 217 53100 | POWER CAP |
| 117 | 4822 532 60948 | BUSCH |
| 125 | 3104 211 29730 | COVERPLATE |

### ELECTRICAL PARTS

| | | |
|---|---|---|
| 1003 | 3104 217 06780 | MDM 2000 V2 |
| 5001 ▲ | 3104 218 30980 | MAINS TRAFO |
| 8020 ▲ | 4822 321 11139 | POWER CORD |

### MISCELLANEOUS PARTS

| | |
|---|---|
| 4822 303 50063 | FM AERIAL 75R |
| 2422 076 00314 | CABLE COMB/CINCH |
| 4822 303 50082 | AM FRAME |
| 3104 219 04310 | IRT PROD. ASSY |
| 4822 321 61452 | CABLE ASSY CINCH/CINCH |
| 3103 306 17010 | INSTR.FOR USE |



note: Only the parts mentioned in this list are normal service parts

## ELECTRICAL PARTSLIST - MONO2 BOARD

### MISCELLANEOUS

| | | | |
|---|---|---|---|
| 1256 | ▲ | 4822 252 51173 | FUSE 1A |
| 1258 | ▲ | 4822 071 51602 | FUSE 1.6A |
| 1260 | ▲ | 4822 252 51123 | FUSE 6,3A |
| 1261 | ▲ | 4822 252 51123 | FUSE 6,3A |
| 1301 | ▲ | 2422 015 19403 | CONN. SCREW |
| 1502 | | 4822 267 31823 | CONN. CINCH |
| 1512 | | 4822 267 31823 | CONN. CINCH |
| 1513 | | 4822 267 31823 | CONN. CINCH |
| 1514 | | 4822 267 31823 | CONN. CINCH |
| 1516 | | 4822 267 31823 | CONN. CINCH |
| 1520 | | 4822 265 10981 | CINCH 1P |
| 1521 | | 2422 025 11067 | CONN. BM V 12P |
| 1523 | | 2422 025 11067 | CONN. BM V 12P |
| 1525 | | 4822 265 11608 | CONN. CINCH |
| 1540 | | 4822 265 20542 | CONN. CINCH |
| 1542 | | 2422 026 05134 | CONN. CINCH |
| 1550 | | 4822 267 31729 | CINCH 1P |
| 1801 | | 4822 267 31996 | CONN. 1P |
| 1802 | | 4822 265 11619 | CINCH 2P |
| 1803 | | 4822 265 11619 | CINCH 2P |
| 1901 | | 4822 265 11609 | CONN. CLICK 4P |

### CAPACITORS

| | | |
|---|---|---|
| 2251 | 5322 121 42578 | 100NF 5% 250V |
| 2254 | 5322 121 42578 | 100NF 5% 250V |
| 2257 | 4822 122 33177 | 10NF 20% 50V |
| 2259 | 4822 124 80415 | 4700UF20% 50V |
| 2260 | 4822 124 80415 | 4700UF20% 50V |
| 2266 | 5322 121 42386 | 100NF 5% 63V |
| 2267 | 4822 124 41751 | 47UF 20% 50V |
| 2268 | 5322 121 42386 | 100NF 5% 63V |
| 2269 | 4822 124 11583 | 2200UF 20% 35V |
| 2270 | 4822 126 13838 | 100NF 50V P80M20 |
| 2271 | 4822 126 14583 | 470NF 10% 16V |
| 2272 | 4822 124 12328 | 6800UF 16V |
| 2273 | 4822 126 14585 | 100NF 10% 50V |
| 2274 | 4822 126 14583 | 470NF 10% 16V |
| 2275 | 4822 124 81144 | 1000U 16V |
| 2276 | 4822 126 14585 | 100NF 10% 50V |
| 2277 | 4822 126 14583 | 470NF 10% 16V |
| 2278 | 4822 124 22652 | 2,2UF20% 50V |
| 2279 | 4822 126 14585 | 100NF 10% 50V |
| 2280 | 4822 124 41584 | 100UF 20% 10V |
| 2281 | 4822 126 13838 | 100NF 50V P80M20 |
| 2282 | 4822 126 14583 | 470NF 10% 16V |
| 2283 | 4822 124 11769 | 220UF 20% 50V |
| 2290 | 4822 124 40248 | 10UF20% 63V |
| 2295 | 4822 122 33177 | 10NF 20% 50V |
| 2297 | 4822 124 40248 | 10UF20% 63V |
| 2298 | 4822 126 13751 | 47NF10% X7R 63V |
| 2301 | 5322 122 32654 | 22NF10%X7R 63V |
| 2302 | 4822 124 81151 | 22UF 50V |
| 2306 | 4822 124 40248 | 10UF20% 63V |
| 2307 | 5322 122 32287 | 4,7PF 5%NP0 50V |
| 2310 | 4822 124 40248 | 10UF20% 63V |
| 2311 | 5322 122 32268 | 470PF 10% 50V |
| 2313 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2314 | 4822 126 13473 | 220NF80-20% 50V |

### CAPACITORS

| | | |
|---|---|---|
| 2315 | 4822 124 41584 | 100UF 20% 10V |
| 2316 | 4822 124 40248 | 10UF20% 63V |
| 2319 | 5322 122 32268 | 470PF 10% 50V |
| 2321 | 4822 126 13473 | 220NF80-20% 50V |
| 2324 | 5322 122 32287 | 4,7PF 5%NP0 50V |
| 2325 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2330 | 4822 124 41584 | 100UF 20% 10V |
| 2333 | 4822 126 13473 | 220NF80-20% 50V |
| 2334 | 4822 124 40248 | 10UF20% 63V |
| 2337 | 5322 122 32268 | 470PF 10% 50V |
| 2341 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2346 | 4822 124 41584 | 100UF 20% 10V |
| 2347 | 5322 122 32287 | 4,7PF 5%NP0 50V |
| 2349 | 4822 124 40248 | 10UF20% 63V |
| 2350 | 4822 124 40181 | 220UF20% 10V |
| 2351 | 4822 126 13751 | 47NF10% X7R 63V |
| 2352 | 4822 124 81151 | 22UF 50V |
| 2357 | 4822 126 12882 | 100NF+80-20% 50V |
| 2358 | 4822 126 13473 | 220NF80-20% 50V |
| 2359 | 4822 126 13473 | 220NF80-20% 50V |
| 2360 | 4822 126 13473 | 220NF80-20% 50V |
| 2365 | 4822 121 41857 | 10NF 5% 250V |
| 2371 | 5322 126 10223 | 4,7NF10%X7R 63V |
| 2372 | 5322 126 10223 | 4,7NF10%X7R 63V |
| 2373 | 5322 126 10223 | 4,7NF10%X7R 63V |
| 2374 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2375 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2376 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2501 | 5322 126 10511 | 1NF 5%NP0 50V |
| 2502 | 5322 126 10511 | 1NF 5%NP0 50V |
| 2505 | 5322 126 10511 | 1NF 5%NP0 50V |
| 2506 | 5322 126 10511 | 1NF 5%NP0 50V |
| 2507 | 5322 126 10511 | 1NF 5%NP0 50V |
| 2508 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2509 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2510 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2511 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2512 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2513 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2514 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2515 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2516 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2517 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2518 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2519 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2520 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2521 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2522 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2525 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2526 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2527 | 4822 124 41751 | 47UF 20% 50V |
| 2528 | 4822 124 41751 | 47UF 20% 50V |
| 2529 | 4822 126 13838 | 100NF 50V P80M20 |
| 2530 | 4822 126 13838 | 100NF 50V P80M20 |
| 2531 | 4822 121 42408 | 220NF 5% 63V |
| 2532 | 4822 121 42408 | 220NF 5% 63V |
| 2533 | 4822 124 81151 | 22UF 50V |
| 2534 | 4822 124 81151 | 22UF 50V |

## ELECTRICAL PARTSLIST - MONO2 BOARD

### CAPASITORS

| | | |
|---|---|---|
| 2535 | 4822 124 81151 | 22UF 50V |
| 2536 | 4822 124 81151 | 22UF 50V |
| 2537 | 4822 124 81151 | 22UF 50V |
| 2538 | 4822 124 81151 | 22UF 50V |
| 2539 | 4822 124 40207 | 100UF20% 25V |
| 2540 | 4822 124 40433 | 47UF20% 25V |
| 2541 | 4822 124 40248 | 10UF20% 63V |
| 2542 | 4822 124 40248 | 10UF20% 63V |
| 2543 | 4822 124 11912 | 220UF 20% 6,3V |
| 2544 | 4822 124 11912 | 220UF 20% 6,3V |
| 2545 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2546 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2549 | 5322 122 32658 | 22PF 5% 50V |
| 2550 | 5322 122 32658 | 22PF 5% 50V |
| 2551 | 4822 126 13838 | 100NF 50V P80M20 |
| 2552 | 4822 126 13838 | 100NF 50V P80M20 |
| 2553 | 4822 124 41751 | 47UF 20% 50V |
| 2554 | 4822 124 41751 | 47UF 20% 50V |
| 2555 | 4822 126 13838 | 100NF 50V P80M20 |
| 2556 | 4822 126 13838 | 100NF 50V P80M20 |
| 2557 | 4822 124 41751 | 47UF 20% 50V |
| 2558 | 4822 124 41751 | 47UF 20% 50V |
| 2559 | 4822 126 12105 | CER2 50V 33NF PM5 |
| 2561 | 4822 124 40764 | 22UF 100 V |
| 2562 | 4822 124 40764 | 22UF 100 V |
| 2563 | 4822 123 14025 | 16V 2200U 20% |
| 2564 | 4822 124 22652 | 2,2UF20% 50V |
| 2565 | 4822 124 22652 | 2,2UF20% 50V |
| 2566 | 4822 124 22652 | 2,2UF20% 50V |
| 2567 | 4822 124 40769 | 4,7UF20% 100V |
| 2568 | 4822 124 40769 | 4,7UF20% 100V |
| 2569 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2570 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2571 | 4822 124 40248 | 10UF20% 63V |
| 2572 | 4822 124 40248 | 10UF20% 63V |
| 2573 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2574 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2575 | 4822 124 40248 | 10UF20% 63V |
| 2576 | 4822 124 40248 | 10UF20% 63V |
| 2577 | 4822 122 33177 | 10NF 20% X7R 50V |
| 2578 | 4822 122 33177 | 10NF 20% X7R 50V |
| 2579 | 4822 122 33127 | 2,2NF10%X7R 63V |
| 2580 | 4822 122 33127 | 2,2NF10%X7R 63V |
| 2581 | 4822 124 41751 | 47UF 20% 50V |
| 2582 | 4822 124 41751 | 47UF 20% 50V |
| 2583 | 4822 122 33891 | 3,3NF10%X7R 63V |
| 2584 | 4822 122 33891 | 3,3NF10%X7R 63V |
| 2585 | 4822 126 13695 | 82PF 1% NP0 63V |
| 2586 | 4822 126 13695 | 82PF 1% NP0 63V |
| 2593 | 4822 124 81151 | 22UF 50V |
| 2594 | 4822 124 81151 | 22UF 50V |
| 2595 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2596 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2599 | 5322 122 32658 | 22PF 5% 50V |
| 2600 | 5322 122 32658 | 22PF 5% 50V |
| 2603 | 4822 124 81151 | 22UF 50V |
| 2604 | 4822 124 81151 | 22UF 50V |

### CAPACITORS

| | | |
|---|---|---|
| 2605 | 4822 126 13692 | 47PF 1% NP0 63V |
| 2606 | 4822 126 13692 | 47PF 1% NP0 63V |
| 2607 | 4822 124 41751 | 47UF 20% 50V |
| 2608 | 4822 124 41751 | 47UF 20% 50V |
| 2610 | 4822 122 33575 | 220PF 5% NP0 63V |
| 2611 | 4822 124 40207 | 100UF20% 25V |
| 2612 | 4822 124 40248 | 10UF20% 63V |
| 2613 | 4822 124 40248 | 10UF20% 63V |
| 2614 | 4822 124 40207 | 100UF20% 25V |
| 2615 | 5322 122 32654 | 22NF10%X7R 63V |
| 2616 | 5322 122 32654 | 22NF10%X7R 63V |
| 2617 | 4822 124 40248 | 10UF20% 63V |
| 2618 | 4822 124 40248 | 10UF20% 63V |
| 2619 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2620 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2622 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2623 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2624 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2625 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2626 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2627 | 5322 122 32531 | 100PF 5%NP0 50V |
| 2628 | 4822 126 14585 | 100NF 10% 50V |
| 2629 | 4822 124 41751 | 47UF 20% 50V |
| 2630 | 5322 121 42386 | 100NF 5% 63V |
| 2631 | 5322 121 42386 | 100NF 5% 63V |
| 2632 | 5322 121 42386 | 100NF 5% 63V |
| 2633 | 5322 122 32654 | 22NF10%X7R 63V |
| 2634 | 5322 122 32654 | 22NF10%X7R 63V |
| 2635 | 5322 122 32654 | 22NF10%X7R 63V |
| 2636 | 4822 126 14585 | 100NF 10% 50V |
| 2637 | 4822 124 41751 | 47UF 20% 50V |
| 2638 | 4822 126 14585 | 100NF 10% 50V |
| 2639 | 4822 124 41751 | 47UF 20% 50V |
| 2641 | 4822 124 21913 | 1UF20% 63V |
| 2642 | 4822 124 21913 | 1UF20% 63V |
| 2643 | 4822 124 21913 | 1UF20% 63V |
| 2644 | 4822 124 21913 | 1UF20% 63V |
| 2645 | 4822 124 21913 | 1UF20% 63V |
| 2646 | 4822 124 21913 | 1UF20% 63V |
| 2647 | 4822 124 21913 | 1UF20% 63V |
| 2648 | 4822 124 21913 | 1UF20% 63V |
| 2649 | 4822 124 21913 | 1UF20% 63V |
| 2650 | 4822 124 21913 | 1UF20% 63V |
| 2651 | 4822 124 21913 | 1UF20% 63V |
| 2652 | 4822 124 21913 | 1UF20% 63V |
| 2655 | 4822 124 21913 | 1UF20% 63V |
| 2656 | 4822 124 21913 | 1UF20% 63V |
| 2657 | 4822 124 21913 | 1UF20% 63V |
| 2658 | 4822 124 21913 | 1UF20% 63V |
| 2659 | 4822 124 22652 | 2,2UF20% 50V |
| 2660 | 4822 124 22652 | 2,2UF20% 50V |
| 2661 | 4822 124 22652 | 2,2UF20% 50V |
| 2662 | 4822 124 22652 | 2,2UF20% 50V |
| 2663 | 4822 124 22652 | 2,2UF20% 50V |
| 2664 | 4822 124 22652 | 2,2UF20% 50V |
| 2665 | 4822 121 43526 | 47NF 5% 250V |
| 2666 | 4822 121 43526 | 47NF 5% 250V |

## ELECTRICAL PARTSLIST - MONO2 BOARD

CAPACITORS

| | | | |
|---|---|---|---|
| 2667 | 4822 121 43526 | 47NF 5% | 250V |
| 2668 | 4822 121 43526 | 47NF 5% | 250V |
| 2669 | 4822 121 43526 | 47NF 5% | 250V |
| 2670 | 4822 121 43526 | 47NF 5% | 250V |
| 2671 | 5322 122 31866 | 6,8NF10%X7R | 63V |
| 2672 | 5322 122 31866 | 6,8NF10%X7R | 63V |
| 2673 | 5322 122 31866 | 6,8NF10%X7R | 63V |
| 2674 | 5322 122 31866 | 6,8NF10%X7R | 63V |
| 2675 | 5322 122 31866 | 6,8NF10%X7R | 63V |
| 2676 | 5322 122 31866 | 6,8NF10%X7R | 63V |
| 2677 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2678 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2679 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2680 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2681 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2682 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2683 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2684 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2685 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2686 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2687 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2688 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2689 | 5322 121 42465 | 68NF 5% | 63V |
| 2690 | 5322 121 42465 | 68NF 5% | 63V |
| 2691 | 5322 121 42465 | 68NF 5% | 63V |
| 2692 | 5322 121 42465 | 68NF 5% | 63V |
| 2693 | 5322 121 42465 | 68NF 5% | 63V |
| 2694 | 5322 121 42465 | 68NF 5% | 63V |
| 2695 | 5322 121 42465 | 68NF 5% | 63V |
| 2696 | 5322 121 42465 | 68NF 5% | 63V |
| 2697 | 5322 121 42465 | 68NF 5% | 63V |
| 2698 | 5322 121 42465 | 68NF 5% | 63V |
| 2699 | 5322 121 42465 | 68NF 5% | 63V |
| 2700 | 5322 121 42465 | 68NF 5% | 63V |
| 2801 | 4822 124 22833 | 10UF | 50V |
| 2802 | 4822 124 22833 | 10UF | 50V |
| 2803 | 4822 124 22833 | 10UF | 50V |
| 2805 | 4822 126 14585 | 100NF 10% | 50V |
| 2806 | 4822 126 14585 | 100NF 10% | 50V |
| 2807 | 4822 126 14585 | 100NF 10% | 50V |
| 2809 | 5322 122 34098 | 10NF10%X7R | 63V |
| 2810 | 4822 124 40196 | 220UF20% | 16V |
| 2811 | 5322 122 34098 | 10NF10%X7R | 63V |
| 2812 | 4822 124 40196 | 220UF20% | 16V |
| 2813 | 4822 124 21913 | 1UF20% | 63V |
| 2814 | 4822 126 13692 | 47PF 1% NP0 | 63V |
| 2815 | 4822 126 14585 | 100NF 10% | 50V |
| 2816 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2817 | 4822 124 21913 | 1UF20% | 63V |
| 2818 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2821 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2822 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2831 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2832 | 4822 126 14585 | 100NF 10% | 50V |
| 2833 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2834 | 5322 122 32531 | 100PF 5%NP0 | 50V |

CAPACITORS

| | | | |
|---|---|---|---|
| 2835 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2836 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2837 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2851 | 5322 122 32658 | 22PF 5% | 50V |
| 2852 | 5322 122 32658 | 22PF 5% | 50V |
| 2853 | 4822 124 81151 | 22UF | 50V |
| 2854 | 4822 124 81151 | 22UF | 50V |
| 2855 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2856 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2857 | 4822 126 14585 | 100NF 10% | 50V |
| 2858 | 4822 124 41751 | 47UF 20% | 50V |
| 2860 | 4822 124 41751 | 47UF 20% | 50V |
| 2861 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2862 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2863 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2864 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2865 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2866 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2867 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2868 | 4822 122 33575 | 220PF 5% NP0 | 63V |
| 2869 | 4822 122 33575 | 220PF 5% NP0 | 63V |
| 2871 | 4822 122 33177 | 10NF 20% X7R | 50V |
| 2872 | 4822 122 33177 | 10NF 20% X7R | 50V |
| 2873 | 4822 122 33177 | 10NF 20% X7R | 50V |
| 2875 | 4822 122 33177 | 10NF 20% X7R | 50V |
| 2876 | 4822 122 33177 | 10NF 20% X7R | 50V |
| 2877 | 5322 121 42386 | 100NF 5% | 63V |
| 2878 | 5322 121 42386 | 100NF 5% | 63V |
| 2879 | 5322 121 42386 | 100NF 5% | 63V |
| 2880 | 5322 121 42386 | 100NF 5% | 63V |
| 2881 | 5322 121 42386 | 100NF 5% | 63V |
| 2882 | 5322 121 42386 | 100NF 5% | 63V |
| 2883 | 5322 126 10511 | 1NF 5%NP0 | 50V |
| 2884 | 5322 126 10511 | 1NF 5%NP0 | 50V |
| 2885 | 5322 126 10511 | 1NF 5%NP0 | 50V |
| 2886 | 5322 126 10511 | 1NF 5%NP0 | 50V |
| 2887 | 4822 122 33127 | 2,2NF10%X7R | 63V |
| 2888 | 4822 122 33127 | 2,2NF10%X7R | 63V |
| 2901 | 4822 124 81151 | 22UF | 50V |
| 2902 | 4822 124 40248 | 10UF20% | 63V |
| 2904 | 4822 126 13751 | 47NF10% X7R | 63V |
| 2905 | 4822 124 40248 | 10UF20% | 63V |
| 2906 | 5322 122 32268 | 470PF 10% | 50V |
| 2908 | 4822 126 13473 | 220NF80-20% | 50V |
| 2909 | 5322 126 10223 | 4,7NF10%X7R | 63V |
| 2910 | 4822 122 33575 | 220PF 5% NP0 | 63V |
| 2911 | 5322 122 32654 | 22NF10%X7R | 63V |
| 2912 | 4822 124 41584 | 100UF 20% | 10V |
| 2913 | 4822 124 40248 | 10UF20% | 63V |
| 2914 | 5322 122 32268 | 470PF 10% | 50V |
| 2916 | 4822 126 13473 | 220NF80-20% | 50V |
| 2917 | 5322 126 10223 | 4,7NF10%X7R | 63V |
| 2918 | 4822 122 33575 | 220PF 5% NP0 | 63V |
| 2919 | 4822 124 41584 | 100UF 20% | 10V |
| 2920 | 4822 126 13473 | 220NF80-20% | 50V |
| 2921 | 4822 126 13473 | 220NF80-20% | 50V |
| 2923 | 4822 124 81151 | 22UF | 50V |

## *ELECTRICAL PARTSLIST - MONO2 BOARD*

CAPACITORS

| | | | |
|---|---|---|---|
| 2924 | 4822 124 40248 | 10UF20% | 63V |
| 2925 | 4822 124 40181 | 220UF20% | 10V |
| 2926 | 4822 126 14585 | 100NF 10% | 50V |
| 2930 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2931 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2932 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2933 | 5322 122 32531 | 100PF 5%NP0 | 50V |
| 2934 | 5322 126 10511 | 1NF 5%NP0 | 50V |
| 2937 | 4822 122 33575 | 220PF 5% NP0 | 63V |

RESISTORS

| | | | | | |
|---|---|---|---|---|---|
| 3251 | | 4822 051 20471 | 470R00 | 5% | 0,1W |
| 3252 | | 4822 117 10837 | 100K | 1% | 0.1W |
| 3253 | | 4822 117 10837 | 100K | 1% | 0.1W |
| 3254 | ▲ | 4822 117 11342 | 0R33 | 5% | 2W |
| 3256 | | 4822 117 10833 | 10K | 1% | 0,1W |
| 3257 | ▲ | 4822 117 11342 | 0R33 | 5% | 2W |
| 3258 | | 4822 117 11149 | 82K | 1% | 0,1W |
| 3259 | | 4822 117 10361 | 680R | 1% | 0,1W |
| 3260 | | 4822 117 10834 | 47K | 1% | 0,1W |
| 3261 | | 4822 116 83881 | 390R | 5% | 0,5W |
| 3262 | | 4822 050 21003 | 10K00 | 1% | 0,6W |
| 3263 | | 4822 117 10361 | 680R | 1% | 0,1W |
| 3264 | | 4822 117 10837 | 100K | 1% | 0.1W |
| 3266 | | 4822 051 20223 | 22K00 | 5% | 0,1W |
| 3267 | | 4822 051 20392 | 3K90 | 5% | 0,1W |
| 3268 | | 4822 051 20332 | 3K30 | 5% | 0,1W |
| 3269 | | 4822 051 20332 | 3K30 | 5% | 0,1W |
| 3270 | ▲ | 4822 052 10479 | 47R00 | 5% | 0,33W |
| 3271 | ▲ | 4822 052 10479 | 47R00 | 5% | 0,33W |
| 3272 | | 4822 051 20393 | 39K00 | 5% | 0,1W |
| 3273 | | 4822 116 83872 | 220R | 5% | 0,5W |
| 3274 | | 4822 116 83876 | 270R | 5% | 0,5W |
| 3275 | | 4822 117 10353 | 150R | 1% | 0,1W |
| 3276 | | 4822 116 52234 | 100K | 5% | 0,5W |
| 3291 | ▲ | 4822 052 10109 | 10R00 | 5% | 0,33W |
| 3292 | | 4822 116 83933 | 15K | 1% | 0,1W |
| 3293 | | 4822 117 10833 | 10K | 1% | 0,1W |
| 3294 | | 4822 117 10833 | 10K | 1% | 0,1W |
| 3295 | | 4822 116 83933 | 15K | 1% | 0,1W |
| 3301 | ▲ | 4822 052 10479 | 47R00 | 5% | 0,33W |
| 3302 | ▲ | 4822 117 11151 | 1R | 5% | |
| 3304 | | 4822 117 11148 | 56K | 1% | 0,1W |
| 3305 | | 4822 117 10834 | 47K | 1% | 0,1W |
| 3306 | | 4822 117 10834 | 47K | 1% | 0,1W |
| 3307 | | 4822 117 10834 | 47K | 1% | 0,1W |
| 3308 | | 4822 117 11148 | 56K | 1% | 0,1W |
| 3309 | | 4822 050 24708 | 4R70 | 1% | 0,6W |
| 3310 | | 4822 051 20182 | 1K80 | 5% | 0,1W |
| 3311 | | 4822 050 24708 | 4R70 | 1% | 0,6W |
| 3314 | | 4822 117 11148 | 56K | 1% | 0,1W |
| 3315 | | 4822 051 20182 | 1K80 | 5% | 0,1W |
| 3316 | | 4822 050 24708 | 4R70 | 1% | 0,6W |
| 3319 | | 4822 117 11148 | 56K | 1% | 0,1W |
| 3322 | | 4822 117 11148 | 56K | 1% | 0,1W |
| 3323 | | 4822 051 20182 | 1K80 | 5% | 0,1W |
| 3324 | | 4822 117 11148 | 56K | 1% | 0,1W |
| 3326 | | 4822 051 20333 | 33K00 | 5% | 0,1W |

RESISTORS

| | | | | | |
|---|---|---|---|---|---|
| 3327 | | 4822 117 11503 | 220R | 1% | 0.1W |
| 3328 | ▲ | 4822 052 10479 | 47R00 | 5% | 0,33W |
| 3329 | | 4822 117 10837 | 100K | 1% | 0.1W |
| 3330 | | 4822 117 10833 | 10K | 1% | 0,1W |
| 3334 | | 4822 051 10102 | 1K00 | 2% | 0,25W |
| 3335 | | 4822 051 10102 | 1K00 | 2% | 0,25W |
| 3336 | | 4822 051 10102 | 1K00 | 2% | 0,25W |
| 3337 | ▲ | 4822 117 11744 | 0R22 | 5% | 1W |
| 3338 | ▲ | 4822 117 11744 | 0R22 | 5% | 1W |
| 3339 | | 4822 117 11139 | 1K5 | 1% | 0,1W |
| 3340 | | 4822 117 11139 | 1K5 | 1% | 0,1W |
| 3341 | ▲ | 4822 117 11744 | 0R22 | 5% | 1W |
| 3342 | ▲ | 4822 117 11744 | 0R22 | 5% | 1W |
| 3343 | | 4822 117 11139 | 1K5 | 1% | 0,1W |
| 3344 | ▲ | 4822 117 11744 | 0R22 | 5% | 1W |
| 3345 | ▲ | 4822 117 11744 | 0R22 | 5% | 1W |
| 3352 | ▲ | 4822 053 10478 | 4R70 | 5% | 1W |
| 3353 | ▲ | 4822 053 10478 | 4R70 | 5% | 1W |
| 3354 | ▲ | 4822 053 10478 | 4R70 | 5% | 1W |
| 3356 | | 4822 117 10834 | 47K | 1% | 0,1W |
| 3357 | | 4822 050 21003 | 10K00 | 1% | 0,6W |
| 3358 | | 4822 051 10102 | 1K00 | 2% | 0,25W |
| 3359 | | 4822 117 10837 | 100K | 1% | 0.1W |
| 3360 | | 4822 117 10833 | 10K | 1% | 0,1W |
| 3361 | | 4822 051 20471 | 470R00 | 5% | 0,1W |
| 3362 | | 4822 051 20471 | 470R00 | 5% | 0,1W |
| 3363 | | 4822 051 20471 | 470R00 | 5% | 0,1W |
| 3501 | | 4822 116 83933 | 15K | 1% | 0,1W |
| 3502 | | 4822 116 83933 | 15K | 1% | 0,1W |
| 3505 | | 4822 116 52244 | 15K | 5% | 0,5W |
| 3506 | | 4822 116 52244 | 15K | 5% | 0,5W |
| 3509 | | 4822 116 83933 | 15K | 1% | 0,1W |
| 3510 | | 4822 116 83933 | 15K | 1% | 0,1W |
| 3511 | | 4822 051 20101 | 100R00 | 5% | 0,1W |
| 3512 | | 4822 051 20101 | 100R00 | 5% | 0,1W |
| 3513 | | 4822 117 10834 | 47K | 1% | 0,1W |
| 3514 | | 4822 117 10834 | 47K | 1% | 0,1W |
| 3515 | | 4822 051 20471 | 470R00 | 5% | 0,1W |
| 3516 | | 4822 051 20471 | 470R00 | 5% | 0,1W |
| 3517 | | 4822 051 20393 | 39K00 | 5% | 0,1W |
| 3518 | | 4822 051 20393 | 39K00 | 5% | 0,1W |
| 3519 | | 4822 051 20822 | 8K20 | 5% | 0,1W |
| 3520 | | 4822 051 20822 | 8K20 | 5% | 0,1W |
| 3521 | | 4822 051 20393 | 39K00 | 5% | 0,1W |
| 3522 | | 4822 051 20393 | 39K00 | 5% | 0,1W |
| 3523 | | 4822 051 20822 | 8K20 | 5% | 0,1W |
| 3524 | | 4822 051 20822 | 8K20 | 5% | 0,1W |
| 3525 | | 4822 051 20393 | 39K00 | 5% | 0,1W |
| 3526 | | 4822 051 20393 | 39K00 | 5% | 0,1W |
| 3527 | | 4822 051 20822 | 8K20 | 5% | 0,1W |
| 3528 | | 4822 051 20822 | 8K20 | 5% | 0,1W |
| 3529 | | 4822 051 20471 | 470R00 | 5% | 0,1W✓ |
| 3530 | | 4822 051 20471 | 470R00 | 5% | 0,1W✓ |
| 3531 | | 4822 051 20393 | 39K00 | 5% | 0,1W |
| 3532 | | 4822 051 20393 | 39K00 | 5% | 0,1W |
| 3533 | | 4822 051 20822 | 8K20 | 5% | 0,1W |
| 3534 | | 4822 051 20822 | 8K20 | 5% | 0,1W |

## ELECTRICAL PARTSLIST - MONO2 BOARD

RESISTORS

| | | | | | |
|---|---|---|---|---|---|
| 3537 | 4822 051 20393 | 39K00 | 5% | 0,1W | |
| 3538 | 4822 051 20393 | 39K00 | 5% | 0,1W | |
| 3539 | 4822 051 20822 | 8K20 | 5% | 0,1W | |
| 3540 | 4822 051 20822 | 8K20 | 5% | 0,1W | |
| 3541 | 4822 051 20393 | 39K00 | 5% | 0,1W | |
| 3542 | 4822 051 20393 | 39K00 | 5% | 0,1W | |
| 3543 | 4822 117 12955 | 2K7 | 1% | 0,1W | 0805 |
| 3544 | 4822 117 12955 | 2K7 | 1% | 0,1W | 0805 |
| 3545 | 4822 117 10833 | 10K | 1% | 0,1W | |
| 3546 | 4822 117 10833 | 10K | 1% | 0,1W | |
| 3551 | 4822 117 11504 | 270R | 1% | 0.1W | |
| 3552 | 4822 117 11504 | 270R | 1% | 0.1W | |
| 3553 | 4822 117 11504 | 270R | 1% | 0.1W | |
| 3554 | 4822 117 11504 | 270R | 1% | 0.1W | |
| 3555 | 4822 051 20332 | 3K30 | 5% | 0,1W | |
| 3556 | 4822 117 11504 | 270R | 1% | 0.1W | |
| 3557 | 4822 117 11504 | 270R | 1% | 0.1W | |
| 3560 | 4822 051 10102 | 1K00 | 2% | 0,25W | |
| 3561 ⚠ | 4822 052 10478 | 4R70 | 5% | 0,33W | |
| 3562 | 4822 051 20471 | 470R00 | 5% | 0,1W | |
| 3563 | 4822 051 10102 | 1K00 | 2% | 0,25W | |
| 3566 | 4822 116 83876 | 270R | 5% | 0,5W | |
| 3567 | 4822 116 83876 | 270R | 5% | 0,5W | |
| 3571 | 4822 051 20334 | 330K00 | 5% | 0,1W | |
| 3572 | 4822 051 20334 | 330K00 | 5% | 0,1W | |
| 3573 | 4822 051 10102 | 1K00 | 2% | 0,25W | |
| 3574 | 4822 051 10102 | 1K00 | 2% | 0,25W | |
| 3575 | 4822 117 11148 | 56K | 1% | 0,1W | |
| 3576 | 4822 117 11148 | 56K | 1% | 0,1W | |
| 3577 | 4822 051 20561 | 560R00 | 5% | 0,1W | |
| 3578 | 4822 051 20561 | 560R00 | 5% | 0,1W | |
| 3579 | 4822 051 20394 | 390K00 | 5% | 0,1W | |
| 3580 | 4822 051 20394 | 390K00 | 5% | 0,1W | |
| 3581 | 4822 051 20273 | 27K00 | 5% | 0,1W | |
| 3582 | 4822 051 20273 | 27K00 | 5% | 0,1W | |
| 3583 | 4822 050 21003 | 10K00 | 1% | 0,6W | |
| 3584 | 4822 050 21003 | 10K00 | 1% | 0,6W | |
| 3585 | 4822 117 11139 | 1K5 | 1% | 0,1W | |
| 3586 | 4822 117 11139 | 1K5 | 1% | 0,1W | |
| 3587 | 4822 051 20392 | 3K90 | 5% | 0,1W | |
| 3588 | 4822 116 52276 | 3K9 | 5% | 0,5W | |
| 3589 | 4822 117 10833 | 10K | 1% | 0,1W | |
| 3590 | 4822 117 10833 | 10K | 1% | 0,1W | |
| 3591 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3592 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3593 | 4822 051 20472 | 4K70 | 5% | 0,1W | |
| 3594 | 4822 051 20472 | 4K70 | 5% | 0,1W | |
| 3595 | 4822 051 20472 | 4K70 | 5% | 0,1W | |
| 3596 | 4822 051 20472 | 4K70 | 5% | 0,1W | |
| 3601 | 4822 051 20101 | 100R00 | 5% | 0,1W | |
| 3602 | 4822 051 20101 | 100R00 | 5% | 0,1W | |
| 3603 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3604 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3605 | 4822 117 11383 | 12K | 1% | 0,1W | |
| 3606 | 4822 117 11383 | 12K | 1% | 0,1W | |
| 3607 | 4822 051 20333 | 33K00 | 5% | 0,1W | |
| 3608 | 4822 051 20333 | 33K00 | 5% | 0,1W | |

RESISTORS

| | | | | | |
|---|---|---|---|---|---|
| 3609 | 4822 051 20121 | 120R00 | 5% | 0,1W | |
| 3610 | 4822 051 20121 | 120R00 | 5% | 0,1W | |
| 3611 | 4822 117 10834 | 47K | 1% | 0,1W | |
| 3612 | 4822 117 10834 | 47K | 1% | 0,1W | |
| 3613 | 4822 051 20471 | 470R00 | 5% | 0,1W | |
| 3614 | 4822 051 20471 | 470R00 | 5% | 0,1W | |
| 3615 | 4822 051 20471 | 470R00 | 5% | 0,1W | |
| 3616 | 4822 051 20471 | 470R00 | 5% | 0,1W | |
| 3618 | 4822 117 10834 | 47K | 1% | 0,1W | |
| 3619 | 4822 117 10834 | 47K | 1% | 0,1W | |
| 3620 | 4822 116 52175 | 100E | 5% | 0,5W | |
| 3621 | 4822 051 20101 | 100R00 | 5% | 0,1W | |
| 3622 | 4822 051 20121 | 120R00 | 5% | 0,1W | |
| 3623 | 4822 051 20121 | 120R00 | 5% | 0,1W | |
| 3627 ⚠ | 4822 052 10109 | 10R00 | 5% | 0,33W | |
| 3629 ⚠ | 4822 052 10109 | 10R00 | 5% | 0,33W | |
| 3630 | 4822 050 11002 | 1K00 | 1% | 0,4W | |
| 3631 | 4822 050 11002 | 1K00 | 1% | 0,4W | |
| 3632 | 4822 050 11002 | 1K00 | 1% | 0,4W | |
| 3633 | 4822 051 10102 | 1K00 | 2% | 0,25W | |
| 3634 | 4822 051 10102 | 1K00 | 2% | 0,25W | |
| 3635 | 4822 051 10102 | 1K00 | 2% | 0,25W | |
| 3636 | 4822 051 20471 | 470R00 | 5% | 0,1W | |
| 3637 | 4822 051 20471 | 470R00 | 5% | 0,1W | |
| 3641 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3642 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3643 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3644 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3645 | 4822 117 11148 | 56K | 1% | 0,1W | |
| 3646 | 4822 117 11148 | 56K | 1% | 0,1W | |
| 3649 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3650 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3651 | 4822 117 11148 | 56K | 1% | 0,1W | |
| 3652 | 4822 117 11148 | 56K | 1% | 0,1W | |
| 3655 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3656 | 4822 117 10837 | 100K | 1% | 0.1W | |
| 3657 | 4822 117 11148 | 56K | 1% | 0,1W | |
| 3658 | 4822 117 11148 | 56K | 1% | 0,1W | |
| 3659 | 4822 117 12955 | 2K7 | 1% | 0,1W | 0805 |
| 3660 | 4822 117 12955 | 2K7 | 1% | 0,1W | 0805 |
| 3661 | 4822 051 20562 | 5K6 | 5% | 0,1W | 0805 |
| 3662 | 4822 051 20562 | 5K6 | 5% | 0,1W | 0805 |
| 3663 | 4822 117 12955 | 2K7 | 1% | 0,1W | 0805 |
| 3664 | 4822 117 12955 | 2K7 | 1% | 0,1W | 0805 |
| 3665 | 4822 051 20562 | 5K6 | 5% | 0,1W | 0805 |
| 3666 | 4822 051 20562 | 5K6 | 5% | 0,1W | 0805 |
| 3667 | 4822 117 12955 | 2K7 | 1% | 0,1W | 0805 |
| 3668 | 4822 117 12955 | 2K7 | 1% | 0,1W | 0805 |
| 3669 | 4822 051 20562 | 5K6 | 5% | 0,1W | 0805 |
| 3670 | 4822 051 20562 | 5K6 | 5% | 0,1W | 0805 |
| 3671 | 4822 117 10834 | 47K | 1% | 0,1W | |
| 3672 | 4822 117 10834 | 47K | 1% | 0,1W | |
| 3673 | 4822 117 11449 | 2K2 | 5% | 0,1W | 0805 |
| 3674 | 4822 117 11449 | 2K2 | 5% | 0,1W | 0805 |
| 3675 | 4822 051 20101 | 100R00 | 5% | 0,1W | |
| 3676 | 4822 051 20101 | 100R00 | 5% | 0,1W | |
| 3677 | 4822 117 10834 | 47K | 1% | 0,1W | |

## ELECTRICAL PARTSLIST - MONO2 BOARD

RESISTORS

| | | |
|---|---|---|
| 3678 | 4822 117 10834 | 47K 1% 0,1W |
| 3679 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3680 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3681 | 4822 051 20101 | 100R00 5% 0,1W |
| 3682 | 4822 051 20101 | 100R00 5% 0,1W |
| 3683 | 4822 117 10834 | 47K 1% 0,1W |
| 3684 | 4822 117 10834 | 47K 1% 0,1W |
| 3685 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3686 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3687 | 4822 051 20101 | 100R00 5% 0,1W |
| 3688 | 4822 051 20101 | 100R00 5% 0,1W |
| 3689 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3690 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3691 | 4822 116 52256 | 2K2 5% 0,5W |
| 3692 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3693 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3694 | 4822 116 52256 | 2K2 5% 0,5W |
| 3695 | 4822 117 13579 | 220K 1% 0.1W |
| 3696 | 4822 117 10833 | 10K 1% 0,1W |
| 3697 | 4822 116 52257 | 22K 5% 0,5W |
| 3698 | 4822 117 13579 | 220K 1% 0.1W |
| 3699 | 4822 117 10833 | 10K 1% 0,1W |
| 3700 | 4822 051 20223 | 22K00 5% 0,1W |
| 3801 | 4822 117 12521 | 68R 1% 0,1W |
| 3802 | 4822 117 12521 | 68R 1% 0,1W |
| 3803 | 4822 117 12521 | 68R 1% 0,1W |
| 3804 | 4822 117 12521 | 68R 1% 0,1W |
| 3805 | 4822 051 10102 | 1K00 2% 0,25W |
| 3806 | 4822 051 10102 | 1K00 2% 0,25W |
| 3809 | 4822 051 20109 | 10R00 5% 0,1W |
| 3810 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3811 | 4822 051 20109 | 10R00 5% 0,1W |
| 3812 | 4822 051 20471 | 470R00 5% 0,1W |
| 3813 | 4822 051 20121 | 120R00 5% 0,1W |
| 3814 | 4822 051 20109 | 10R00 5% 0,1W |
| 3815 | 4822 117 12521 | 68R 1% 0,1W |
| 3816 | 4822 117 12521 | 68R 1% 0,1W |
| 3817 | 4822 117 11504 | 270R 1% 0.1W |
| 3818 | 4822 117 11503 | 220R 1% 0.1W |
| 3820 | 4822 053 10101 | 100R00 5% 1W |
| 3821 | 4822 053 10101 | 100R00 5% 1W |
| 3831 | 4822 051 20101 | 100R00 5% 0,1W |
| 3832 | 4822 051 20479 | 47R00 5% 0,1W |
| 3834 | 4822 051 20101 | 100R00 5% 0,1W |
| 3851 | 4822 051 20332 | 3K30 5% 0,1W |
| 3852 | 4822 051 20273 | 27K00 5% 0,1W |
| 3853 | 4822 117 10833 | 10K 1% 0,1W |
| 3854 | 4822 051 20472 | 4K70 5% 0,1W |
| 3855 | 4822 116 83876 | 270R 5% 0,5W |
| 3856 | 4822 117 11504 | 270R 1% 0.1W |
| 3857 | 4822 117 10837 | 100K 1% 0.1W |
| 3858 | 4822 117 10837 | 100K 1% 0.1W |
| 3859 | 4822 117 10833 | 10K 1% 0,1W |
| 3860 | 4822 117 10833 | 10K 1% 0,1W |
| 3871 | 4822 051 20332 | 3K30 5% 0,1W |
| 3872 | 4822 051 20332 | 3K30 5% 0,1W |
| 3873 | 4822 051 10102 | 1K00 2% 0,25W |

RESISTORS

| | | |
|---|---|---|
| 3874 | 4822 051 10102 | 1K00 2% 0,25W |
| 3875 | 4822 051 20332 | 3K30 5% 0,1W |
| 3877 | 4822 051 10102 | 1K00 2% 0,25W |
| 3878 | 4822 051 10102 | 1K00 2% 0,25W |
| 3879 | 4822 051 20332 | 3K30 5% 0,1W |
| 3880 | 4822 051 20332 | 3K30 5% 0,1W |
| 3881 | 4822 051 10102 | 1K00 2% 0,25W |
| 3882 | 4822 051 10102 | 1K00 2% 0,25W |
| 3883 | 4822 117 11383 | 12K 1% 0,1W |
| 3884 | 4822 117 11383 | 12K 1% 0,1W |
| 3885 | 4822 117 11383 | 12K 1% 0,1W |
| 3886 | 4822 117 11383 | 12K 1% 0,1W |
| 3887 | 4822 117 11383 | 12K 1% 0,1W |
| 3888 | 4822 117 11383 | 12K 1% 0,1W |
| 3889 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3890 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3891 | 4822 051 20822 | 8K20 5% 0,1W |
| 3892 | 4822 051 20822 | 8K20 5% 0,1W |
| 3893 | 4822 051 20822 | 8K20 5% 0,1W |
| 3895 | 4822 051 20822 | 8K20 5% 0,1W |
| 3896 | 4822 051 20822 | 8K20 5% 0,1W |
| 3901 ▲ | 4822 052 10479 | 47R00 5% 0,33W |
| 3902 | 4822 117 11148 | 56K 1% 0,1W |
| 3903 | 4822 117 10834 | 47K 1% 0,1W |
| 3904 | 4822 116 83884 | 47K 5% 0,5W |
| 3905 | 4822 050 24708 | 4R70 1% 0,6W |
| 3906 | 4822 117 11148 | 56K 1% 0,1W |
| 3908 | 4822 051 20182 | 1K80 5% 0,1W |
| 3910 | 4822 050 24708 | 4R70 1% 0,6W |
| 3911 | 4822 117 11148 | 56K 1% 0,1W |
| 3913 | 4822 051 20182 | 1K80 5% 0,1W |
| 3914 | 4822 117 11148 | 56K 1% 0,1W |
| 3915 ▲ | 4822 052 10479 | 47R00 5% 0,33W |
| 3916 ▲ | 4822 053 10478 | 4R70 5% 1W |
| 3917 | 4822 051 20333 | 33K00 5% 0,1W |
| 3918 | 4822 117 11503 | 220R 1% 0.1W |
| 3919 ▲ | 4822 053 10478 | 4R70 5% 1W |
| 3920 | 4822 117 10837 | 100K 1% 0.1W |
| 3921 | 4822 051 10102 | 1K00 2% 0,25W |
| 3922 | 4822 051 10102 | 1K00 2% 0,25W |
| 3925 | 4822 117 10833 | 10K 1% 0,1W |
| 3926 ▲ | 4822 117 11744 | 0R22 5% 1W |
| 3927 ▲ | 4822 117 11744 | 0R22 5% 1W |
| 3928 | 4822 117 11139 | 1K5 1% 0,1W |
| 3929 | 4822 117 11139 | 1K5 1% 0,1W |
| 3930 ▲ | 4822 117 11744 | 0R22 5% 1W |
| 3931 ▲ | 4822 117 11744 | 0R22 5% 1W |
| 3935 | 4822 051 10102 | 1K00 2% 0,25W |
| 3936 | 4822 117 10837 | 100K 1% 0.1W |
| 3937 | 4822 117 10833 | 10K 1% 0,1W |
| 3938 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3939 | 4822 117 11449 | 2K2 5% 0,1W 0805 |
| 3940 | 4822 117 11503 | 220R 1% 0.1W |
| 3941 | 4822 117 11503 | 220R 1% 0.1W |
| 3943 | 4822 117 10833 | 10K 1% 0,1W |
| 3944 | 4822 117 11503 | 220R 1% 0.1W |
| 3945 | 4822 117 11503 | 220R 1% 0.1W |

## *ELECTRICAL PARTSLIST - MONO2 BOARD*

RESISTORS

| | | |
|---|---|---|
| 3946 | 4822 051 20471 | 470R00 5% 0,1W |
| 3947 | 4822 051 20471 | 470R00 5% 0,1W |
| 3948 | 4822 117 11503 | 220R 1% 0.1W |
| 3949 | 4822 117 11503 | 220R 1% 0.1W |
| 3950 | 4822 051 20182 | 1K80 5% 0,1W |
| 3951 | 4822 051 20182 | 1K80 5% 0,1W |
| 3952 | 4822 051 20101 | 100R00 5% 0,1W |
| 3953 | 4822 051 20101 | 100R00 5% 0,1W |
| 3954 | 4822 051 20101 | 100R00 5% 0,1W |
| 3955 | 4822 051 20101 | 100R00 5% 0,1W |
| 4251 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4252 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4256 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4258 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4259 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4260 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4283 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4284 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4285 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4287 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4320 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4506 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4513 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4514 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4515 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4516 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4517 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4518 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4519 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4520 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4521 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4522 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4523 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4524 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4526 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4528 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4529 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4530 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4531 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4532 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4533 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4537 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4538 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4539 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4540 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4541 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4542 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4543 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4544 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4545 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4548 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4550 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4551 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4552 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4553 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4555 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4556 | 4822 051 20008 | 0R00 JUMP. (0805) |

RESISTORS

| | | |
|---|---|---|
| 4557 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4558 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4559 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4560 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4564 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4565 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4566 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4642 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4644 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4651 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4652 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4653 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4832 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4835 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4902 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4903 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4904 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4905 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4908 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4909 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4910 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4917 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4918 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4920 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4921 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4922 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4923 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4924 | 4822 051 20008 | 0R00 JUMP. (0805) |
| 4925 | 4822 051 20008 | 0R00 JUMP. (0805) |

FILTERS

| | | |
|---|---|---|
| 5302 | 4822 157 62255 | COIL |
| 5304 | 4822 157 62255 | COIL |
| 5306 | 4822 157 62255 | COIL |
| 5901 | 4822 157 62255 | COIL |
| 5902 | 4822 157 62255 | COIL |

DIODES

| | | |
|---|---|---|
| 6251 | 4822 130 82078 | D5SBA20 |
| 6255 | 4822 130 30621 | 1N4148 |
| 6256 | 4822 130 30621 | 1N4148 |
| 6257 | 4822 130 31878 | 1N4003G |
| 6258 | 4822 130 31878 | 1N4003G |
| 6259 | 4822 130 31878 | 1N4003G |
| 6260 | 4822 209 33575 | L7812CP |
| 6261 | 4822 130 31878 | 1N4003G |
| 6262 | 4822 130 31878 | 1N4003G |
| 6263 | 4822 130 31878 | 1N4003G |
| 6264 | 4822 130 34173 | BZX79-B5V6 |
| 6266 | 4822 130 34281 | BZX79-B15 |
| 6267 | 4822 209 31841 | L7805CP |
| 6268 | 4822 130 31878 | 1N4003G |
| 6270 | 4822 130 34278 | BZX79-B6V8 |
| 6271 | 4822 130 30621 | 1N4148 |
| 6274 | 4822 130 31878 | 1N4003G |
| 6275 | 4822 130 31878 | 1N4003G |
| 6276 | 4822 130 34173 | BZX79-B5V6 |
| 6279 | 4822 130 30621 | 1N4148 |
| 6280 | 4822 130 61219 | BZX79-B10 |

## *ELECTRICAL PARTSLIST - MONO2 BOARD*

DIODES

| | | | |
|---|---|---|---|
| 6281 | | 4822 130 34441 | BZX79-B22 |
| 6289 | | 4822 130 83757 | BAS216 |
| 6290 | | 4822 130 83757 | BAS216 |
| 6304 | | 4822 130 11411 | BZX284-C3V3 |
| 6305 | | 4822 130 83757 | BAS216 |
| 6501 | | 4822 130 30621 | 1N4148 |
| 6601 | | 4822 130 30621 | 1N4148 |
| 6602 | | 4822 130 30621 | 1N4148 |
| 6641 | | 4822 130 83757 | BAS216 |
| 6642 | | 4822 130 30621 | 1N4148 |
| 6643 | | 4822 130 30621 | 1N4148 |
| 6644 | | 4822 130 30621 | 1N4148 |
| 6645 | | 4822 130 30621 | 1N4148 |
| 6646 | | 4822 130 83757 | BAS216 |
| 6647 | | 4822 130 83757 | BAS216 |
| 6648 | | 4822 130 83757 | BAS216 |
| 6649 | | 4822 130 31878 | 1N4003G |
| 6650 | ▲ | 4822 130 61219 | BZX79-B10 |
| 6801 | | 4822 130 34278 | BZX79-B6V8 |
| 6802 | | 4822 130 34278 | BZX79-B6V8 |
| 6803 | | 4822 130 34278 | BZX79-B6V8 |
| 6804 | | 4822 130 34278 | BZX79-B6V8 |
| 6805 | | 4822 130 34278 | BZX79-B6V8 |
| 6806 | | 4822 130 34278 | BZX79-B6V8 |
| 6807 | | 4822 130 34278 | BZX79-B6V8 |
| 6808 | | 4822 130 34278 | BZX79-B6V8 |
| 6809 | | 4822 130 30621 | 1N4148 |
| 6810 | | 4822 130 34233 | BZX79-B5V1 |
| 6811 | | 4822 130 34382 | BZX79-B8V2 |
| 6831 | | 4822 130 30621 | 1N4148 |
| 6832 | | 4822 130 30621 | 1N4148 |

TRANSISTORS

| | | | |
|---|---|---|---|
| 7251 | | 9322 139 22687 | BD242BFP |
| 7252 | | 4822 130 60511 | BC847B |
| 7253 | | 4822 130 60511 | BC847B |
| 7254 | | 4822 130 60511 | BC847B |
| 7255 | | 4822 130 60373 | BC856B |
| 7256 | | 4822 130 60511 | BC847B |
| 7257 | | 4822 130 41246 | BC327-25 |
| 7258 | | 4822 130 41246 | BC327-25 |
| 7259 | | 4822 130 60511 | BC847B |
| 7260 | | 4822 130 60511 | BC847B |
| 7261 | | 4822 130 60373 | BC856B |
| 7301 | | 4822 209 17447 | STK496-270 |
| 7304 | | 4822 130 60511 | BC847B |
| 7305 | | 4822 130 60511 | BC847B |
| 7306 | | 4822 130 60511 | BC847B |
| 7307 | | 4822 130 60511 | BC847B |
| 7309 | | 4822 130 60373 | BC856B |
| 7310 | | 4822 130 60511 | BC847B |
| 7501 | | 4822 209 72748 | LC7821 |
| 7503 | | 4822 209 83357 | NJM4560M |
| 7504 | | 4822 209 83357 | NJM4560M |
| 7571 | | 4822 209 70157 | NJM4560DD |
| 7572 | | 4822 209 72748 | LC7821 |
| 7601 | | 4822 209 31378 | NJM4556MB |
| 7621 | | 4822 130 42615 | BC817-40 |
| 7622 | | 4822 130 42615 | BC817-40 |
| 7641 | | 4822 209 17386 | TDA7437T |
| 7642 | | 4822 209 17386 | TDA7437T |
| 7643 | | 4822 209 17386 | TDA7437T |
| 7644 | | 4822 130 40855 | BC337 |
| 7651 | | 4822 130 42615 | BC817-40 |
| 7652 | | 4822 130 42615 | BC817-40 |
| 7653 | | 4822 130 42615 | BC817-40 |
| 7654 | | 4822 130 42615 | BC817-40 |
| 7655 | | 4822 130 42615 | BC817-40 |
| 7656 | | 4822 130 42615 | BC817-40 |
| 7657 | | 4822 130 60373 | BC856B |
| 7658 | | 4822 130 60373 | BC856B |
| 7660 | | 4822 209 83357 | NJM4560M |
| 7661 | | 4822 130 42615 | BC817-40 |
| 7662 | | 4822 130 42615 | BC817-40 |
| 7801 | | 4822 130 60511 | BC847B |
| 7802 | ▲ | 4822 130 44568 | BC557B |
| 7803 | | 4822 209 16886 | STV6401 |
| 7901 | | 4822 209 17385 | STK496-070 |
| 7902 | | 4822 130 60511 | BC847B |
| 7903 | | 4822 130 60511 | BC847B |
| 7904 | | 4822 130 60511 | BC847B |
| 7908 | | 4822 130 60373 | BC856B |
| 7909 | | 4822 130 60511 | BC847B |
| 7910 | | 9322 139 22687 | BD242BFP |